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I.

PLANTÆ FENDLERIANÆ NOVI-MEXICANÆ: *An Account of a Collection of Plants made chiefly in the Vicinity of Santa Fé, New Mexico, by* AUGUSTUS FENDLER; *with Descriptions of the New Species, Critical Remarks, and Characters of other undescribed or little known Plants from surrounding Regions.*

BY ASA GRAY, M. D.

(*Communicated to the Academy, November 8th*, 1848.)

DESIROUS to render the occupation of New Mexico by the United States troops subservient to the advancement of science, and to make known the vegetation of a region which had scarcely been visited by a naturalist, Dr. Engelmann and myself, with the coöperation of one or two friends who patronized the enterprise, induced Mr. Fendler to undertake a botanical exploration of the country around Santa Fé. In execution of this plan, Mr. Fendler left Fort Leavenworth, on the Missouri, on the 10th of August, 1846, with a military train, he having been allowed by the Secretary of War a free transportation for himself, his luggage, and collections. The following account of his route, and brief indication of the physical features of the country, I copy from a sketch which Dr. Engelmann has kindly furnished.*

* Further information of interest, as to the character and features of the country, may be found in Dr. Wislizenus's *Memoir of a Tour to Northern Mexico, in* 1846 *and* 1847, with excellent maps, profile-elevations, &c., printed by the U. S. Senate; in Lieut. Abert's *Report of an Expedition on the Upper Arkansas and through the Country of the Camanche Indians*, &c.; and also, doubtless, in Lieut. Emory's Report, — of which unfortunately, I have not been able to procure a copy.

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"Mr. Fendler travelled the well-beaten track of the Santa Fé traders to the Arkansas, and then followed that river up to Bent's Fort, which he reached on the 5th of September. On the 25th of September the Arkansas was crossed, four miles above Bent's Fort, and the westerly course was now changed to a southwestern direction. *Opuntia arborescens* was first observed in the barren region now traversed; and the shrubby Atriplex (No. 709) was the most characteristic and abundant plant, furnishing almost the only fuel to be obtained. Thus far the country was a comparatively level, or rather rolling, prairie, rising gradually from one thousand to more than four thousand feet. But on September 27th, the base of the mountain chain was reached, which is an outlier of the Rocky Mountains, and attains in the Raton Mountains the elevation of eight thousand feet. West of these, in dim distance, the still higher Spanish Peaks appear, which have only been visited, very cursorily, by the naturalists of Major Long's expedition in 1820. Scattered pine-trees are here seen for the first time on the Rio de los Animos (or Purgatory River of the Anglo-Americans), which issues from the Raton Mountains. The party several times crossed large perfectly level tracts, which at this season, at least, showed not a sign of vegetation; in other localities of the same description, nothing but a decumbent species of Opuntia was observed. The sides of the Raton Mountains were studded with the tall *Pinus brachyptera*, Engelm. (831), and the elegant *Pinus concolor* (828). Descending the mountains, the road led along their southeastern base, across the head-waters of the Canadian.

"On the 11th of October, Mr. Fendler obtained the first view of the valley of Santa Fé, and was disagreeably surprised by the apparent sterility of the region where his researches were to commence in the following season. The mountains rise probably to near nine thousand feet above the sea-level, two thousand feet above the town, but do not reach the line of perpetual snow, and are destitute, therefore, of strictly alpine plants. Their sides are studded with the two Pines already mentioned, with *Pinus flexilis*, &c.

"The Rio del Norte, twenty-five or thirty miles west from Santa Fé, is probably two thousand feet lower than the town, and spring opens earlier there; but its peculiar flora is meagre. On its sandy banks a few interesting plants were obtained; and some others in places where black basaltic rocks rise abruptly from the river, or where a rocky talus lies at their base.

"South and southwest of Santa Fé, a sterile, almost level plain extends for fifteen miles, which offers few resources to the botanist. *Opuntia clavata* was found exclusively here; besides this, *Opuntia arborescens*, *O. phæacantha*, *Cereus coccineus*, some grasses, and in some localities the *Shrub Cedar* (834), are the only plants seen on these wide plains. To the west and northwest of Santa Fé, a range of gravelly hills thinly covered with Cedar and the Nut-pine (830) offers a good botanizing ground in early spring. The valleys between these hills appear to have a fertile soil, but cannot be cultivated for want of irrigation. They furnished some very interesting portions of Mr. Fendler's collection, and of Cactaceæ, the *Mammilaria papyracantha*, *Cereus viridiflorus*, *C. triglochidiatus*, and *C. Fendleri*.

"By far the richest and most interesting region about Santa Fé for the botanist, as will be seen from the localities cited in the following systematic enumeration, is the valley of the Rio Chiquito (*little creek*) or Santa Fé Creek. It takes its origin about sixteen or eighteen miles

northeast of the town, from a small mountain lake or pond, runs through a narrow, chasm-like valley, which widens about three miles from Santa Fé, and opens into the plain just where the town is built. Below, the water of the creek is almost entirely absorbed by the numerous irrigating ditches, which are most essential for the fertilization of the else sterile fields. Most of the characteristic plants of the upper part of the creek and of the mountain-sides are those of the Rocky Mountains, or of allied forms; some of which, such as *Atragene Ochotensis* or *alpina*, *Draba aurea*, &c., have never before been met with in so low a latitude (under 36°).

"Mr. Fendler made his principal collections from the beginning of April to the beginning of August, 1847, in the region just described. At that time, unforeseen obstacles obliged him to leave the field of his successful researches. He quitted Santa Fé, August 9th, followed the usual road to Fort Leavenworth, which separates from the 'Bent's Fort road' at the Mora River, and unites with it again at the 'Crossing of the Arkansas.' The first part of the route from Santa Fé to Vegas leads through a mountainous, wooded country, of much botanical interest, crossing the water-courses of the Pecos, Ojo de Bernal, and Gallinas. From Vegas the road leads northeastwardly through an open prairie country, occasionally varied with higher hills, as far as the Round Mound (6,655 feet high, according to Dr. Wislizenus). The principal water-courses on this part of the route, all of which furnished different remarkable species, were the Mora, Ocaté, Colorado (the head of the Canadian), and Rock Creek, all of which empty into the Canadian. Rabbit's Ear Creek and McNees Creek (the head-waters of the north fork of the Canadian) are east of the mountains altogether. From thence the Cimarron was reached, where the Cold Spring, Upper, Middle, and Lower Spring, and Sand Creek are interesting localities. On September 4th, Mr. Fendler recrossed the Arkansas, and reached Fort Leavenworth on the 24th of that month."

Mr. Fendler is about to revisit New Mexico, for a more thorough exploration of the botany of that little known region, and especially of the higher mountains in the northern and western part of the district. It is greatly to be wished that he should receive patronage, in the form of additional subscriptions for his collections, which may enable him to reëngage in this arduous undertaking under more favorable circumstances than before.

Several families of the ensuing enumeration, such as the Cactaceæ, Cuscutineæ, Asclepiadeæ, Euphorbiaceæ, &c., have been elaborated by Dr. Engelmann, of St. Louis, upon whom a large share of the labor and care incident to this enterprise has fallen. His name is affixed to the portions, as well as to various notes, thus contributed by him.

The species of which there were not sufficient specimens collected for distribution in the sets are designated by the sign (†) prefixed to the number. *Vide* No. †2 *et seq.*

RANUNCULACEÆ.

1. CLEMATIS LIGUSTICIFOLIA, *Nutt.! in Torr. & Gray, Fl. N. Am.* 1. *p.* 9. Flowering specimens of both sexes, gathered at Santa Fé, July, and on the Mora River, August; in bottom land, near the water. Likewise at Rio de los Animos, between

Bent's Fort and Santa Fé. There are also fruiting specimens, gathered between the middle of August and January. — The specimens have larger and smoother foliage than the original ones of Nuttall. The leaves are all 5–7-foliolate.

†2. C. PITCHERI, *Torr. & Gray, Fl. N. Am.* 1. *p.* 10. Council Grove, August. — The styles are entirely glabrous in flower, but become more or less pubescent in fruit. The species extends northeastward to Illinois, where it was gathered by Dr. Mead.

3. ATRAGENE OCHOTENSIS, *Pall. Fl. Ross.* 2. *p.* 69; *DC. Prodr.* 1. *p.* 10. Sides and base of steep rocks, in shady places near the creek, Santa Fé; climbing over shrubs. Gathered in flower from May 12 to June 3. — It is singular that this species should have been for the first time detected in the New World at a point so far south. The foliage, &c., is just as in A. alpina, of which it is most probably a mere variety, as Schlechtendal has suggested in respect to the plant from Kamtschatka. But the staminodia are linear, at first scarcely longer than the ordinary stamens, and are all manifestly antheriferous; at length they become a little dilated upwards, and acute or apiculate. How slight dependence is to be placed upon the form of these organs, however, has been shown by Ledebour (*Fl. Alt.* 2. *p.* 378), when justly reducing A. Sibirica to A. alpina. Specimens gathered by myself at Ischl, in Upper Austria, exhibit them strongly emarginate. Nor are they uniformly acute in A. Americana, but oftener spatulate and obtuse, as delineated in *Genera Fl. Amer. Bor.-Orientalis Illustrata, t.* 1.

4. ANEMONE CYLINDRICA, *Gray.* Shady places in a mountain valley a few miles east of Santa Fé; flowering in June. — This species often flowers after the manner of A. Virginiana, developing involucels and secondary peduncles. It should doubtless be referred to De Candolle's section *Anemospermos.*

5. PULSATILLA PATENS, *Mill.; Torr. & Gray, Fl. l. c.* Mountains, east of Santa Fé.

†6. CALTHA LEPTOSEPALA, *DC.; Hook. Fl. Bor.-Am.* 1. *p.* 22. *t.* 10. Sunny margin of the creek, six miles above Santa Fé, in the mountains. — There are only one or two specimens; and they agree with the plant gathered by Dr. James, in having more oblong leaves than in Hooker's figure, with so acute a sinus as to appear almost sagittate.

•7. RANUNCULUS TRIDENTATUS, *H. B. K. Nov. Gen. & Sp.* 5. *p.* 42; *Benth.! Pl. Hartw. no.* 1. Wet places, forming large patches by sending off runners in all directions. — Closely resembling R. cymbalaria, *Pursh*, but larger in all its parts: the flowers are as large as those of R. salsuginosus, and 9–12-petalous in all my specimens.

8. R. AFFINIS, *R. Br.* Var. *β. Hook. Fl. Bor.-Am.* 1. *p.* 13. *t.* 6, *A.* Moist places, Santa Fé; April to June. — The primordial radical leaves are barely crenate-toothed; the others 3–5-parted or lobed. Carpels pubescent, in cylindrical-oblong heads.

9. AQUILEGIA CANADENSIS, *Linn.* Rocks in a mountain valley, near Santa Fé. A dwarf form, with more slender spurs than usual: but I observe no other difference.

†10. DELPHINIUM AZUREUM, *Michx.* Between Bent's Fort and Santa Fé; in bottoms.

11. D. AZUREUM, var. with greenish blue flowers. Banks of the Mora River.

12. ACTÆA RUBRA, *Willd.* Damp, shady places in the mountains around Santa Fé.

13. THALICTRUM FENDLERI (*Engelm. Mss.*): dioicum; foliis petiolatis; petiolulis primariis brachiatis vel refractis stipellatis; foliolis cordato-rotundatis trilobis; filamentis apice vix incrassatis; antheris setigero-mucronatis; carpellis sessilibus oblique ovatis complanatis costatis carinato-alatis stylo recurvo triplo longioribus; cæt. fere T. Cornuti. — With the last. (T. Cornuti, of which a few specimens gathered on the Mora River were distributed with this species, has the fruit terete, with the prominent ribs all equal.)

BERBERIDACEÆ.

14. BERBERIS (MAHONIA) AQUIFOLIUM, *Pursh, Fl.* 1. *p.* 219. *t.* 4. Mountains; upper part of Santa Fé Creek. "Calyx 6-bracteolate." *Engelm.*

15. BERBERIS FENDLERI (sp. nov.): nitidissima; ramis vernicosis; spinis 3–5-partitis; foliis oblanceolatis oblongisve muticis subintegerrimis utrinque lucidis; racemis pendulis densifloris folia multo excedentibus; bracteolis calyculi sepalis dimidio brevioribus; petalis acutiusculis; baccis immaturis subglobosis 2–3-spermis. — Santa Fé Creek, at the foot of steep and rocky banks, near the water. Shrubs three to four feet high, flowering at the end of May. — A beautiful and very distinct species, allied to B. Canadensis; but with the numerous and crowded golden flowers fully as large as those of B. vulgaris: the conspicuous calyculate bractlets tinged with red or pink. Branches brown, remarkably smooth and shining, as if varnished. The leaves are also lucid; those of the clusters from 6 to 18 lines long, and quite entire, or with few obsolete teeth; but the cauline appear to be sparingly spinulose-serrate.

PAPAVERACEÆ.

16. ARGEMONE HISPIDA (sp. nov.): radice perenni; caule crasso foliisque profunde pinnatifidis pube brevi cinerea undique tectis et (nervis marginibusque præsertim) setosissimis; calyce aculeato; corolla alba maxima; capsula cylindrica (2-unciali) acutata spinis validis setisque horrida. — Low, sandy places around Santa Fé; the stems 1 to 2 feet high, growing socially in great numbers; June, July. (Also on the Upper Arkansas, &c., *Fremont, Wislizenus.*) — The flower is 3 or 4 inches in diameter, and accords with Dr. Lindley's figure of A. grandiflora, excepting the prickly calyx. That is a glabrous plant, while ours is not only densely setose, but is hoary throughout with a short and close hirsute pubescence. The pod is covered with very strong spines, of which the larger are often branched, and also with smaller prickles and a hoary and bristly pubescence. A. Mexicana was also collected, in two forms.

FUMARIACEÆ.

17. CORYDALIS AUREA, *Willd.; Torr. & Gray, Fl.* 1. *p.* 63: var. (C. montana, *Engelm. Mss.*) siliquis undique vel ad suturas tantum pruinoso-puberulis. — Rocks, Santa Fé Creek; April to July; with fine golden-yellow flowers, as in the plant from Northern New York and Vermont, and, like it, biennial. The pruinosity of the pod is variable, and sometimes slight; so that I cannot consider the plant as a distinct species.

CRUCIFERÆ.

18. NASTURTIUM SINUATUM, *Nutt. in Torr. & Gray, Fl.* 1. *p.* 73. Low, sandy banks washed by the water, from the Mora River to the Rio del Norte. — The specimens accord well with Nuttall's character, but have no ripe fruit. Specimens gathered in Missouri by Dr. Engelmann have linear and arcuate siliques, as long as their pedicels.

19. N. OBTUSUM, *Nutt. l. c.* Low, wet places along Santa Fé Creek. — One of the minute-flowered species, of diffuse habit. The divisions of the leaves are much less toothed than in specimens from the Mississippi River, &c. In this, as in other species of the genus, the siliques vary in length and shape; some specimens being barely oblong, and, in a form gathered in Texas by Mr. Wright, even short oval; thus bearing the same relation to the type of the species that the next does to the genuine N. palustre.

20. N. PALUSTRE, *DC. Syst.* 2. *p.* 191: var. siliculis turgide ovoideis; caule foliisque inferne hirtis. Santa Fé Creek. — This is just the common species of the Northern States, which passes for the N. palustre (cf. *Gray, Man. Bot. N. U. S. p.* 32); but it has much shorter pods than the true plant of that name, into which, nevertheless, it appears to merge by numerous gradations. A more hairy form, with remarkably small and ovate pods, is N. hispidum, *DC.* The only *characteristic* North American specimens of N. palustre which I possess were collected by Dr. Sartwell in Western New York.

21. N. SPHÆROCARPUM (sp. nov.): glabrum; caule erecto seu decumbente; foliis oblongis obtusis lyrato-pinnatifidis vel incisis obtuse dentatis (ramealibus subintegerrimis) petiolatis, petiolo anguste marginato basi pl. m. auriculato; racemis paniculatis; floribus minutis; petalis albis spatulatis calycem subæquantibus; siliculis globosis (vix lineam longis) parvis stylo brevi apiculatis pedicello paulo brevioribus. — Low places along Santa Fé Creek. — Allied apparently to N. globosum and N. Camelinæ, *Fisch. & Mey.*; which, with N. Austriacum, N. amphibium, &c., are ambiguous between this genus and Cochlearia or Armoracia, to which they are by some authors referred.

22. STREPTANTHUS LONGIFOLIUS, *Benth.! Pl. Hartw. no.* 52. *p.* 10. At the foot of the mountains on Santa Fé Creek; July, August. — The half-grown pods are pendulous. Lower leaves rough-hirsute, lanceolate, more or less toothed, the radical strongly so.

23. S. MICRANTHUS (sp. nov.): caule gracili inferne scabro superne glaberrimo paniculato; foliis anguste linearibus integerrimis scabris (in sicco falcato-contortis); racemis gracillimis laxis; floribus pusillis erectis; petalis lineari-spathulatis (roseo-albidis) calycem laxum purpureo modice tinctum) paulo excedentibus; filamentis liberis inclusis; siliquis filiformibus teretis appresso-erectis; seminibus immarginatis. — Margins of Santa Fé Creek; July. — The smallest-flowered species of the genus. Allied to the preceding; but the flowers only a line long, and the siliques in all stages strictly erect. These are small in proportion, 1½ inch long at most, scarcely thicker than sewing-thread, and quite terete. Stem two feet high; the slender leaves one to two inches long, the upper nearly filiform.

24. S. LINEARIFOLIUS (sp. nov.): glaberrimus; caule erecto apice paniculato; foliis linearibus vel inferioribus lanceolatis acutatis integerrimis basi attenuatis sessilibus rigidiusculis subglaucis; petalis obovatis (roseo-purpureis), unguibus calyce laxo subduplo longioribus; siliquis (immaturis) erectis filiformibus teretiusculis (2½ unc. longis) stylo brevissimo apiculatis; seminibus immarginatis oblongis. — Mountainous regions from Santa Fé to Vegas, on sunny rocks; July, Aug. — Plant a foot or more in height, from an annual or biennial root, often branched from the base. Leaves 1½ to 2½ inches long, pale, rigid, all tapering to a narrow base; the radical wanting. Sepals turning purplish. Petals half an inch long, or less. Valves of the narrow silique carinate – one-nerved.

25. ARABIS HIRSUTA, *Scop.* Santa Fé Creek, &c. June, July.

†26. TURRITIS GLABRA, *Linn.* With the last.

27. T. PATULA, *Graham! in Edinb. New Phil. Jour.; Hook! Fl. Bor.-Am.* 1. *p.* 40. — Moist, sandy soil and on rocks, Santa Fé Creek; March to May. — Flowers white, usually tinged with rose-color, rather smaller than in the original specimens.*

* T. retrofracta, *Hook.* (which, according to a Greenland specimen from Prof. Vahl, is Arabis Holbollii, *Fl. Dan.*), has hirsute pedicels, as mentioned by Graham in the original description. We have a variety of this (in flower only), gathered on the Kooskooskee River by the Rev. Mr. Spalding, which has deep purple flowers like a Streptanthus. It is, perhaps, the Streptanthus angustifolius of Nuttall.

There are no well-defined limits between Streptanthus, Arabis, and Turritis. The subjoined is a new Texan species, which might, perhaps, as well be referred to Arabis § Lomaspora as to Streptanthus.

STREPTANTHUS PETIOLARIS (sp. nov.): subglauca; caule elato; foliis omnibus longe petiolatis amplis, radicalibus parce pilosis lyrato-sectis, caulinis glaberrimis inferioribus lyrato-3–5-lobatis vel hastatis triangulato-lanceolatis repando-dentatis acuminatis, superioribus lanceolatis plerisque integerrimis; racemo virgato laxifloro; petalis spathulatis albidis et purpureo tinctis calycem erectiusculum virido-purpurescentem subdimidio excedentibus pedicello apice incrassato brevioribus; siliquis lato-linearibus complanatis rectis erectis stylo brevissimo apiculatis; valvis planis venulosis basi tantum uninervatis; seminibus in loculis circ. 20 latissime alatis septo æquilatis; funiculis septo adnatis, parte libera dilatatis. — San Marcos Spring, Texas, *Mr. Charles Wright;* May. Also raised in the Botanic Garden from seeds which flowered as an annual in September. — Whole plant glabrous, except the base of the stem and the lowest leaves. Stems 2 or 3 feet

28. CARDAMINE CORDIFOLIA (sp. nov.): caule erecto simplici e rhizomate fibrilloso repente basi piloso usque ad apicem folioso; foliis omnibus petiolatis cordatis parce repando-dentatis angulatisve ciliatis, infimis rotundatis, superioribus triangulato-cordatis subacuminatis; floribus majusculis albis; siliquis immaturis erectis pedicello duplo longioribus. — Margin of Santa Fé Creek, in the mountains; May, June. — A species nearly allied to C. rhomboidea, C. rotundifolia, and C. asarifolia; distinguished from the first by having numerous cauline leaves which are all cordate and petioled, and by its shorter fructiferous pedicels; and from the second by the stouter stems, the cordate, acute, and ciliate upper leaves, thickish pedicels, larger flowers, &c. It appears to be stoloniferous from the base. The foliage is more like that of C. asarifolia; but the leaves are not reniform, or rounded except the lowest, and are $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long.

29–31. SISYMBRIUM INCISUM (*Engelm. Mss.*): "annuum vel bienne; caule glabriusculo seu puberulo seu glanduloso-piloso; foliis pinnatisectis, segmentis lanceolatis vel lineari-lanceolatis inciso-serratis; petalis flavis lanceolato-spathulatis calycem superantibus; pedicellis calyce ter-quaterve longioribus, fructiferis (racemo fructifero elongato) patentibus capillaribus siliquas lineari-filiformes erecto-patentes subæquantibus; valvis indistincte uninerviis." — Banks of streams in New Mexico; Santa Fé Creek and Mora River; June to August. Plant 1 to 2 feet high, branching, at length almost glabrous. Silique about 5 lines long; the valves with one indistinct middle nerve. Seeds linear-oblong, yellow, almost smooth, in one row. — Distinguished from S. Sophia by the longer petals, shorter silique on proportionally longer pedicels, and coarser, much less divided leaves. No. 29 and No. 31 are forms with large leaves, their lanceolate segments coarsely serrate or incised. No. 30 is a very imperfect and dubious specimen. — From Clear Water, Oregon, by Mr. Spalding, I have another form (*β.* FILIPES) of the same species, with the divisions of the cauline leaves narrowly linear, sparingly incised or incisely pinnatifid, or some of them quite entire, and with fructiferous pedicels three fourths of an inch long and longer than the pods. The species would appear to stand between S. Sophia and S. tanacetifolium, *L.* (Hugueninia, *Reichenbach*), with which, like its allies, it accords in the barely one-nerved valves of the silique.

32. S. CANESCENS, *Nutt. Gen. 2. p.* 68. Dry hills around Santa Fé. Valves of the silique only one-nerved, as in Hugueninia; but the seeds more or less 2-seriate.

high, mostly simple. Leaves from 3 to 7 inches long, and with petioles of about half their length; the lower with a hastate-lanceolate or triangular outline; the upper broadly lanceolate with a truncate, rounded, or often a tapering base. Flowers two or three lines long. Petals narrowly spatulate, gradually narrowed into a canaliculate barely concave claw. Siliques numerous, in a virgate raceme, three inches long, two lines wide: valves membranaceous; the midnerve distinct at the base, but evanescent below the middle. Septum nerveless; the areolæ oblong, bounded by even lines.

33. ERYSIMUM ASPERUM, *DC.; Hook. Fl. Bor.-Am.* 1. *p.* 64. *t.* 22. In ripe fruit. — San Miguel to the east of Rock Creek, in patches of fertile and loose soil, on high prairies; August. — Cotyledons incumbent. Siliques spreading.

34. E. ASPERUM, *DC.* With rather small flowers and narrow leaves: yet scarcely agreeing in the length of the petals with E. parviflorum, *Nutt.* — Valley of Santa Fé Creek; May to July.

35. E. ASPERUM, *DC.*, var. A less hoary form, with larger flowers; the young siliques erect. — High on a ledge of rocks overlooking the Rio del Norte; May. — Mr. Nuttall has apparently multiplied the species unduly.

† 36. STANLEYA PINNATIFIDA, *Nutt.! Gen.* 2. *p.* 71; *Gray, Gen. Ill. t.* 65. — A single specimen was gathered in September, 1846, fifteen miles northeast of Rio de los Animos, between Bent's Fort and New Mexico. It bears nearly full-grown pods, as well as flowers, although all the lower part of the dense racemes have been unfruitful. The upper leaves are linear, and many of them, and even of the lower, are entire or nearly so. Hence it may be S. heterophylla, *Nutt.;* but the lamina of the petals is much shorter than the claws. — Although not mentioned in Hooker's Enumeration of Geyer's collection, I possess a specimen, distributed as No. 97, of what appears to be S. viridiflora, *Nutt.* The thick and smooth leaves are all perfectly entire.

† 37. SINAPIS NIGRA, *Linn.* Near irrigating ditches, Santa Fé; June, July. Doubtless introduced.

38. VESICARIA ALPINA, *Nutt.! in Torr. & Gray, Fl.* 1. *p.* 102; *Hook.! Lond. Jour. Bot.* 6. *p.* 70. On the lesser hills west of Santa Fé, in pebbly and dry soil, on gently sloping declivities; April to May, and, in fruit, June 7th. — Abundant and fine specimens of this rare species are distributed. The dense, silvery tufts are completely covered with the showy, golden-yellow blossoms. It would be a charming plant for rockwork. In some specimens the style is considerably shorter than the silicle.

† 39. V. ARCTICA, *Richards.*, var. *a. Hook. Fl. Bor.-Am.* 1. *p.* 48? Dry, gravelly hills, Santa Fé; May. In flower only.

† 40. V. FENDLERI (sp. nov.): suffruticosa, nana; caulibus ramosissimis dense foliosis paucifloris; foliis spathulato-linearibus brevibus ($\frac{1}{4}-\frac{1}{2}$ unc. longis) integerrimis argenteo-incanis, infimis rosulatis; siliculis globosis glaberrimis stylo tenuissimo paulo brevioribus. — On the smaller hills around Santa Fé; with No. 38. The single, but very perfect specimen, gathered on the 21 of May, is almost entirely in fruit. The numerous stems are two or three inches high, branched from the base, and the shoots of the year are thickly clothed with the silvery leaves, which are much smaller than in any other species. The flowers are apparently less than half the size of those of V. Ludoviciana, and only

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34. E. ASPERUM, *DC.* With rather small flowers and narrow leaves: yet scarcely agreeing in the length of the petals with E. parviflorum, *Nutt.* — Valley of Santa Fé Creek; May to July.

35. E. ASPERUM, *DC.*, var. A less hoary form, with larger flowers; the young siliques erect. — High on a ledge of rocks overlooking the Rio del Norte; May. — Mr. Nuttall has apparently multiplied the species unduly.

†36. STANLEYA PINNATIFIDA, *Nutt.! Gen.* 2. *p.* 71; *Gray, Gen. Ill. t.* 65. — A single specimen was gathered in September, 1846, fifteen miles northeast of Rio de los Animos, between Bent's Fort and New Mexico. It bears nearly full-grown pods, as well as flowers, although all the lower part of the dense racemes have been unfruitful. The upper leaves are linear, and many of them, and even of the lower, are entire or nearly so. Hence it may be S. heterophylla, *Nutt.;* but the lamina of the petals is much shorter than the claws. — Although not mentioned in Hooker's Enumeration of Geyer's collection, I possess a specimen, distributed as No. 97, of what appears to be S. viridiflora, *Nutt.* The thick and smooth leaves are all perfectly entire.

†37. SINAPIS NIGRA, *Linn.* Near irrigating ditches, Santa Fé; June, July. Doubtless introduced.

38. VESICARIA ALPINA, *Nutt.! in Torr. & Gray, Fl.* 1. *p.* 102; *Hook.! Lond. Jour. Bot.* 6. *p.* 70. On the lesser hills west of Santa Fé, in pebbly and dry soil, on gently sloping declivities; April to May, and, in fruit, June 7th. — Abundant and fine specimens of this rare species are distributed. The dense, silvery tufts are completely covered with the showy, golden-yellow blossoms. It would be a charming plant for rockwork. In some specimens the style is considerably shorter than the silicle.

†39. V. ARCTICA, *Richards.*, var. *a. Hook. Fl. Bor.-Am.* 1. *p.* 48? Dry, gravelly hills, Santa Fé; May. In flower only.

†40. V. FENDLERI (sp. nov.): suffruticosa, nana; caulibus ramosissimis dense foliosis paucifloris; foliis spathulato-linearibus brevibus ($\frac{1}{4}-\frac{1}{2}$ unc. longis) integerrimis argenteo-incanis, infimis rosulatis; siliculis globosis glaberrimis stylo tenuissimo paulo brevioribus. — On the smaller hills around Santa Fé; with No. 38. The single, but very perfect specimen, gathered on the 21 of May, is almost entirely in fruit. The numerous stems are two or three inches high, branched from the base, and the shoots of the year are thickly clothed with the silvery leaves, which are much smaller than in any other species. The flowers are apparently less than half the size of those of V. Ludoviciana, and only

from two to six on each stem; the smooth pods are exactly spherical, about 2 lines in diameter, and on pedicels only one fourth of an inch long.

41. Draba cuneifolia, *Nutt.! in Torr. & Gray, Fl.* 1. *p.* 108. Bed of Santa Fé Creek, in moist and gravelly soil; April and May.*

42. D. micrantha, *Nutt. l. c.* Sunny side of ravines on the Rio del Norte. In fruit; May.

43. D. aurea, *Vahl. Fl. Dan. t.* 1460; *Hook. Bot. Mag. t.* 2934. Shady declivities, along Santa Fé Creek, at the foot of mountains, &c.; May to July. — Exactly the plant figured by Hooker, from seeds gathered by Drummond in the Rocky Mountains: but it is apparently a perennial.

44. Thlaspi cochleariforme, *DC. Syst.* 2. *p.* 381; *Deless. Ic. Select.* 2. *t.* 52. Santa Fé Creek, in the mountains; March to June.

45. Lepidium ruderale, *Linn.* Eastern Mountain range, near Santa Fé.

46. L. alyssoides (sp. nov.): annuum, glabrum; caulibus diffusis corymboso-racemosis; foliis anguste linearibus mucronulatis basi attenuatis integerrimis, infimis nunc pinnato-3–5-lobatis; racemis densis corymbosis; petalis orbiculato-spathulatis calyce triplo longioribus; staminibus 6; siliculis ovatis apteris vix emarginatis glabris; stylo brevissimo. — Mountain valleys, from Santa Fé eastward to Rabbit's Ear Creek; Aug. Also recently collected (in the Rocky Mountains?) by Col. Fremont. — Plant 6 to 12 inches high; the corymbose branches minutely puberulent, terminated by dense racemes of conspicuous pure white flowers as large as those of L. montanum, and somewhat resembling Iberis odorata. Leaves 1½ to 2 inches long, about a line wide, the lowest cauline on the larger specimens two lines wide, and often bearing two or four lateral lobes, otherwise entire. Radical leaves wanting. Silicles a line in length, smaller than those of L. integrifolium and more rhombic-ovate: style thrice the length of the minute emargination.

CAPPARIDACEÆ.

47. Cristatella Jamesii, *Torr. & Gray, Fl.* 1. *p.* 124; *Gray, Gen. Ill. t.* 77. Deep, sandy soil, Cimarron River; Aug.

48. Polanisia trachysperma, *Torr. & Gray, Fl.* 1. *p.* 669; *Gray, Gen. Ill. t.* 79. Rather low places, from the Cimarron River to the Rio Colorado. I have elsewhere remarked, that "the verrucose-roughened surface of the seeds, from which the name was

* The plant named Draba lutea β. longipes by Hooker in Geyer's collection, having minutely hispid silicles, would appear to be a form of D. nemoralis.

taken, is not constant, and is sometimes found in P. graveolens; the flowers also vary greatly in size. The species, however, is perfectly distinguished from P. graveolens by the long style, the more exserted stamens, and the entire absence of a stipe to the ovary and pod. It would seem to accord very well with P. uniglandulosa, except that the flowers are only one fourth the size of those delineated in the original figure of that species by Cavanilles." I now possess the Mexican species, which agrees with the figure of Cavanilles in the size of the flowers, and has proportionally much longer styles and stamens than in our plant. I have cultivated our species for several years, and it proves to be quite handsome, flowering throughout the summer.

49. Cleome (Peritoma, *DC.*) integrifolia, *Torr. & Gray, Fl.* 1. *p.* 122; *Gray, Gen. Ill. t.* 76. Low plains, from the Arkansas to Santa Fé; June to October. A white-flowered variety is also mentioned by Fendler. This would be very ornamental in cultivation. The figure in the *Genera Illustrata* was drawn from a specimen which had nearly done flowering, and gives no idea of the beauty of the species.

VIOLACEÆ.

50. Viola cucullata, *Ait.* Santa Fé Creek; April to June.

51. V. Canadensis, *Linn.* Fertile mountain-sides, Santa Fé Creek; May to July.*

CISTACEÆ.

† 52. Lechea minor, *Lam.* Sixty miles west of Independence, Missouri.

HYPERICACEÆ.

53. Hypericum Scouleri, *Hook.! Fl. Bor.-Am.* 1. *p.* 111. Moist places, Santa Fé Creek bottom; June, July. (Also on the Kooskooskee, *Mr. Spalding.*)

CARYOPHYLLACEÆ.

54. Sagina Linnæi, *Presl, Rel. Hænk.* 2. *p.* 14; *Fenzl! in Ledeb. Fl. Ross.* 1. *p.* 339. (Spergula saginoides, *Linn.*) Valley of Santa Fé Creek; May. — Capsule sometimes 6-valved.

† 55. Drymaria sperguloides (sp. nov.): annua, glabra; caule erecto ramoso; foliis

* To this species Hooker (*Fl. Bor.-Am.*) refers V. Scouleri, *Dougl. Mss.;* but a specimen from herb. Bentham, communicated by Dr. Scouler, is surely the V. glabella, *Nutt.;* as also is No. 602 of Geyer's Oregon collection, named by Hooker V. striata. The petals appear to have been sulphur-color. No. 295 of the same collection (V. orbiculata, *Geyer Mss.*) is certainly neither V. rotundifolia nor V. blanda, but, I suspect, V. sarmentosa of Douglas.

sessilibus lineari-filiformibus carnosulis pseudo-verticillatis internodias æquantibus; cymulis terminalibus laxis paucifloris; pedicellis fructiferis deflexis calyce bracteisque oblongis scariosis duplo longioribus; sepalis ovalibus obtusissimis carnosis vix uninerviis margine latissime scariosis; petalis calyce brevioribus ad medium 4-fidis, laciniis exterioribus multo majoribus; capsula pleiosperma. — Valley of Santa Fé Creek in the mountains, in a plain grazed by cattle and horses. Also between Santa Fé and Pecos; July and August. — Plant a span high, in aspect much like depauperate specimens of Spurry (Spergula arvensis); its flowers and pods about the same size. Style 3-parted. Stipules minute, but distinct, mostly geminate. This and the succeeding differ widely in aspect from the ordinary species of Drymaria, on account of the attenuated and sessile leaves. There is another in Dr. Gregg's Mexican collection, with the aspect of Polycarpon tetraphyllum, and evidently allied to D. holosteoides and D. glauca of Bentham.*

†56. D. TENELLA (sp. nov.): annua, glabra; caule erecto dichotomo ramisque setaceis; foliis sessilibus internodiis multo brevioribus, radicalibus spathulatis brevissimis, caulinis lineari-setaceis; floribus terminalibus brevissime pedicellatis; bracteis minimis ovatis scariosis; sepalis ovatis obtusiusculis 3-nerviis muticis late scarioso-marginatis petala angusta profunde bifida æquantibus; ovario circa 12-ovulato. — Shady places, in woodland on the mountain region, eight miles west of Las Vegas, New Mexico; August; without fruit. — This is a much slenderer plant than the foregoing (5 inches high), with similar leaves, only they are not fasciculate-whorled, and are mostly far shorter than the almost capillary internodes (of which the lower are 1½ to 2 inches long), and the flowers are less than half the size, borne on erect pedicels about as long as the minute bracts, but shorter than the calyx. The geminate and subulate stipules are very small and fugacious.†

* DRYMARIA POLYCARPOIDES (sp. nov.): annua, glauca, depressa; caulibus e collo pluribus adsurgentibus (2-pollicaribus); foliis ovatis obovatisve basi in petiolum brevem angustatis integerrimis crassis internodia plerumque superantibus; cymulis terminalibus et axillaribus plurifloris bracteatis; floribus pro genere maximis (4–5 lin. longis) pedicellis longioribus; petalis sepala ovata obtusa plana margine late scariosa æquantibus alte bifidis, laciniis oblongis integerrimis; ovario multiovulato. — Valley of Bolson de Mapimi, *Dr. Gregg.* — Stamens 5. Capsule not seen.

† A species nearly allied to this, which was raised from seeds mixed with those of a Mammilaria brought from the mountains of Chihuahua by Dr. Wislizenus, is thus characterized by Dr. Engelmann: —

"DRYMARIA NODOSA (sp. nov.): annua, diffusa, trichotomo ramosissima; ramis basi nodosis tumidis brachiatis; internodiis superne glanduloso-puberulis; stipulis filiformibus; foliis linearibus canaliculatis glabris; floribus in dichotomia ramulorum pedunculatis; sepalis lanceolatis acuminatis trinerviis; petalis ad unguem bipartitis, lobis oblongo-linearibus retusis s. emarginatis calycem superantibus; staminibus 5 disco carnoso quinquelobo insidentibus; ovario breviter stipitato subgloboso pluriovulato; calyce persistente clauso capsulam

60. D. CORDATA, *Willd. ex Rœm. & Schult. Syst. 5. p.* 406? Slender specimens, a little pubescent. A few miles east of Santa Fé; August.

†57. ARENARIA (EREMOGONE) FENDLERI (sp. nov.): caudice polycephalo; turionibus imbricato-polyphyllis; foliis prælongis erectis setaceis planiusculis margine serrulato-scabris cauleque simplici glabris, caulinis ochreato-connatis; cymis strictis sparsifloris et calycibus glanduloso-pubescentibus; pedicellis gracilibus; sepalis ovato-lanceolatis sensim acuminatis cuspidatis inferne late scariosis medio viridibus trinerviis petala obovata subæquantibus; stylis exsertis. — Prairies, five miles west of Las Vegas; August. — A grassy-leaved species, belonging to a group not before known in the New World, and to the subdivision *Chromolemmæ* of Fenzl. My specimen is eleven inches high, just in flower, but destitute of fruit. The leaves of the sterile radical tufts are 3 to 4 inches long; the cauline pairs (3 or 4) successively shorter. Petals white, 4 lines in length.

58. STELLARIA LANUGINOSA, *Torr. & Gray, Fl.* 1. *p.* 187; — a smoothish variety. Foot of high rocks, two miles east of Mora River; August.

62. S. LANUGINOSA; the ordinary form. Santa Fé Creek, in the mountains; June.

59. MÖHRINGIA UMBROSA, (*Fenzl in Ledeb. Fl. Ross.* 1. *p.* 372.) Rocky places, at the foot of mountains, Santa Fé Creek; May. — Plant multicipital, with the leaves approximate, smaller in all its parts than the figure of Ledebour in *Icones Pl. Fl. Ross. t.* 322.

61. CERASTIUM NUTANS, *Raf.; Torr. & Gray, Fl.* 1. *p.* 189. Santa Fé Creek, in the mountains; May, June.

63. SILENE MENZIESII, *Hook. Fl. Bor.-Am.* 1. *p.* 90. *t.* 30; *Torr. & Gray, Fl.* 1. *p.* 676; — a small state with narrower leaves (S. stellarioides, *Nutt.*). — Margins of Santa Fé Creek, in the mountains; May, June.

64. S. ANTIRRHINA, *Linn.* Same habitat as the last.

†65. S. DRUMMONDII, var. (S. multicaule, *Nutt.! in Torr. & Gray, l. c.*) A large state. With the last.

†66. S. SCOULERI, *Hook. Fl. Bor.-Am.* 1. *p.* 88? var.? Woodlands, six miles west of Las Vegas; August.

duplo breviorem includente; seminibus circa 3 asperis. — Cosiquiriachi, in the State of Chihuahua; fl. in June and July. — About 6 inches high, much branched and diffuse; branches at right angles with the stem. Styles of two shapes, short with minute stigmata, and longer than the ovary with 3 distinct recurved stigmata; both forms on the same plant, and both flowers apparently equally fertile." *Engelm. Mss.* — From this, No. 697 of Coulter's Mexican collection (specimens of which I have received from Prof. Harvey) scarcely differs, except that the plant is less diffuse, the leaves nearly plane, the alar pedicels shorter, and the petals smaller, — differences which are likely to arise from station.

†67. S. STELLATA, *Ait.*; *Torr. & Gray, Fl. l. c.* Near Fort Leavenworth; September.

†68. ANYCHIA DICHOTOMA, *Michx.* West of Independence, Missouri.

69. PARONYCHIA JAMESII, *Torr & Gray, Fl.* 1. *p.* 170. High prairies, in gravelly soil, east of Big Sand Creek (between the crossing of the Arkansas and Bent's Fort), Sept., 1846; and from San Miguel, New Mexico, to Council Grove, Aug. – Sept.

70. P. SESSILIFLORA, *Nutt. Gen.* 1. *p.* 160; *Hook. Fl. Bor.-Am.* 1. *p.* 226. *t.* 75. Near McNees Creek (a tributary of the North fork of the Canadian River); August.

PORTULACACEÆ.

71. TALINUM PARVIFLORUM, *Nutt. in Torr. & Gray, Fl.* 1. *p.* 197. Santa Fé Creek, in the mountains; and between Rabbit's Ear Creek and McNees' Creek; July, Aug. Flower lilac. — The capsule is *oval*, and the stamens only *five* in the specimen examined.*

†72. T. CALYCINUM (*Engelm.*): "rhizomate crasso; caulibus demum ramosis; foliis subteretibus elongatis, basi triangulari productis; pedunculis elongatis nudis; cyma bracteosa; sepalis 2 ovato-orbiculatis basi productis cuspidatis persistentibus; petalis fugacibus calycem bis superantibus; staminibus sub-30; stylo elongato [*declinato*]; stigmatibus 3 abbreviatis. — In sandy soil, on the Cimarron River; flowering in June. Differs from T. teretifolium by its larger leaves, larger flowers, much larger and persistent sepals, larger fruit and seed. Leaves 1½ to 2 inches long; flowers 10 to 11 lines in diameter; capsule and seeds twice as large as in T. teretifolium." *Engelm. in Wislizen. Report* (1848), *p.* 88. — Dr. Engelmann, with whom it has now flowered in cultivation, writes that it is quite ornamental, the flowers being even 15 lines in diameter, and that it is further distinguished from T. teretifolium by the style being much exserted beyond the stamens and declined. But the sepals, he remarks, fall away before the capsule ripens. — Fendler's specimens are from the sand-hills, four miles south of the crossing of the Arkansas River; "the flower fine red, of the size of a dime."

†73. PORTULACA PILOSA, *Linn.* Sand-hills of the Arkansas, &c.; Sept. Flower red, nearly the size of a half-dime.

†74. P. OLERACEA, *Linn.* Santa Fé; common in waste places.

* The plant of Geyer's collection named "Claytonia spathulata" by Hooker has the leaves all alternate and linear, and the stem branches repeatedly. It is surely different from the plant figured in the *Flora Bor.-Am. t.* 74, and is the C. dichotoma, *Nutt. in Torr. & Gray, Fl.* 1. *p.* 202. — From the Kooskooskee, by Mr. Spalding, I have large and unusually prolonged specimens of C. exigua, *Torr. & Gray, l. c.*; a plant which, in the *Suppl. to Bot. Beech. Voy.* is referred to C. spathulata; but I think incorrectly, judging from the figure and description of the latter species, of which I have no specimen.

MALVACEÆ.

75. Malva borealis, *Wallmann in Liljebl. Sv. Fl.* sec. *Fries.* (M. rotundifolia (borealis), *Fries, Novit. Fl. Suec. ed.* 2. *p.* 218; *Koch, Syn. Fl. Germ. p.* 130. M. rotundifolia *β.* pusilla, *Smith, DC.* M. obtusa, *Torr. & Gray! Fl.* 1. *p.* 225.) Waste places, Santa Fé; June to August. — This species, which is well characterized by Fries, Koch, &c., is distinguished from M. rotundifolia, *Linn.*, by the very small corolla, and by the transversely reticulated-rugose carpels, which are margined on the back, where they meet each other by a more or less toothed edge. The calyx-lobes are also broader and larger, especially in fruit, the leaves somewhat less lobed, and, in the New-Mexican and Californian specimens (probably introduced from the Old World) the peduncles are very much shorter, — a point which is not mentioned by European authors. The root is strictly annual, while that of M. rotundifolia appears often to be perennial. Dr. Engelmann and myself have raised the plant from seeds taken from Fendler's specimens.

76. Callirrhoë* involucrata. (Malva involucrata, *Torr. & Gray, Fl.* 1. *p.* 226.)

* A genus first indicated by Nuttall under this name, which was subsequently changed to that of Nuttallia, but its diagnostic characters have not yet been given. Having been founded on exinvolucellate species, it was at first only compared with Sida. But as involucellate species with the same habit became known, it was proposed by Hooker (*Jour. Bot.* 1. *p.* 196) to refer the latter to Malva and the former to Sida. As the radicle, however, proved to be inferior in all of them, they were all placed in the genus Malva in the *Flora of North America* (except an obscure species, the characters of which were not entirely understood); and a new genus was dedicated to Mr. Nuttall. A closer study of the American species thrown into Malva and Sida reveals characters which induce me not only to restore this genus, but to propose some other genera. The character which, on the whole, decides the question in favor of separating *Callirrhoë* from Malva, namely, the transverse process in the carpel, has indeed been already observed by Dr. Torrey (*Fl. N. Amer.* 1. *p.* 682) in a single species which I now refer to it; but it equally exists in the others, though much less conspicuously in some of them. The leading character of the genus which I propose to call *Sidalcea*, namely, the double column separating into clusters of filaments, has also been noticed in the same work. The true *Napæa*, of Clayton, with diœcious flowers, a naked calyx, and an *inferior* radicle, is a totally distinct genus, which (in *Man. Bot. North. United States, p.* 69) I have already restored. There remain a set of ambiguous, perhaps all American, species, which have been referred to Sida when the involucel was inconspicuous, deciduous, or wanting, and to Malva when the involucel was manifest. From the latter, however, they differ by their capitate stigmas (a character which, though generally attributed to Malva, is found in no European species) and usually beaked fruit; and from Sida by the ascending ovule and inferior radicle. By separating these, under the name of *Malvastrum* (a name given by De Candolle to his division of Malva which comprises all the monospermous species, and which is no longer required now that the corresponding divisions are admitted genera), we leave both Malva and Sida much more natural and capable of exact definition. The genera in question would be characterized as follows.

On the Arkansas and the Cimarron. This handsome species I have had in cultivation (from seeds gathered by Col. Fremont) for several years in the Botanic Garden, Cam-

1. MALVA, *Tourn.*, *Linn.* (excl. sp.)

Involucellum triphyllum, persistens. Petala obcordato-biloba. Tubus stamineus simplex, filamentis singulatim exserentibus. Styli filiformes introrsum stigmatosi (hirtelli). Ovulum in loculis solitarium, peritropo-adscendens. Capsula depressa, polycocca; carpella rotundato-reniformia vel cochleata, omnino mutica, semini conformia, indehiscentia, ab axi centrali secedentia. Semen reniforme, loculum implens. Embryo arcuatus vel semicircularis: radicula infera. — Herbæ gerontogeæ; floribus purpureis, roseis, seu albis.

M. ROTUNDIFOLIA, *Linn.*, is extensively naturalized in North America.

M. BOREALIS, *Wallm.* (vide supra No. 75), has doubtless been brought from the Old World also.

M. malachroides, *Hook. & Arn. Bot. Beech. Suppl.*, from California, of which the fruit is unknown, is probably of a different genus.

M. Le Contei, *Buckley, in Sill. Jour.* 45. *p.* 176, = Pavonia Le Contei, *Torr. & Gray, ined.*, nearly allied to P. hastata, *Cav.*

2. CALLIRRHOË, *Nutt.*

Involucellum nullum, vel 1 – 3-phyllum persistens. Petala cuneiformia, truncata, apice sæpe eroso-denticulata. Tubus stamineus, styli, ovula, etc., ut in Malva. Carpella plurima, in rostrum nudum breve crassum pl. m. incurvum seu rectiusculum desinentia, clausa, nunc tarde dehiscentia, intus processu ligulæformi dorsali infra rostrum cavum aucta! Semen subreniforme. Embryo arcuatus: radicula infera. — Herbæ Boreali-Americanæ, perennes, humiles; caulibus e radice napiformi crassa adscendentibus aut procumbentibus; floribus sæpius longe pedunculatis purpureo-rubris vel incarnatis.

Callirrhoë, *Nutt. in Jour. Acad. Philad.* 2. *p.* 181.

Nuttallia, *Dick; Bart. Fl. N. Amer.* 2. *t.* 62; *Hook. Exot. Fl. t.* 171, 172.

Malvæ spec., *Torr. & Gray, Fl.* 1. *p.* 225.

§ 1. MALVOIDEÆ. Involucellum ad basin calycis triphyllum: carpella suborbiculata, rostro et processu interno parvo inconspicuo.

1. C. TRIANGULATA: hirto-pubescens; radice tuberosa; caulibus adscendentibus; foliis triangulatis vel hastatis, radicalibus subcordatis, caulinis infimis deltoideis acuminatis grosse crenatis longe petiolatis, superioribus incisis, summis laciniato-3 – 5-fidis; bracteis minimis; floribus paniculatis; pedicellis subaggregatis flore (rubro-purpureo) brevioribus; involucelli phyllis linearibus apice spathulatis calycis segmenta ovata subæquantibus; carpellis lævibus rostello brevissimo apiculatis dorso uninerviis demum bivalvibus! — Malva triangulata, *Leavenworth in Sill. Jour.* 7. *p.* 62; *Gray, Man. Bot. N. U. S. p.* 70. M. Houghtonii, *Torr. & Gray, Fl.* 1. *p.* 225. Nuttallia triangulata, *Hook. Jour. Bot.* 1. *p.* 197. N. cordifolia, *Nutt. in Jour. Acad. Philad.* 7. *p.* 98. N. cordata, *Lindl. Bot. Reg. t.* 1938. — Dry prairies, from Wisconsin and Iowa to Georgia. — This species in its inflorescence and in the minuteness of the hollow beak, which is incurved as the fruit ripens so as to escape notice, makes the nearest approach to Malva; but the structure is really the same with that which is displayed on a larger scale in the following section. A carpel is figured in *Genera Amer. Bor.-Orientalis Illustrata*, 2. *t.* 218.

2. C. INVOLUCRATA: caulibus e radice napiformi longe procumbentibus pilis patentibus hirsutis; foliis pedato-5-partitis circumscriptione rotundatis, segmentis cuneatis insico-3 – 5-fidis, lobis dentibusque fol. infimo-

bridge, where it is perfectly hardy. The root, as in all the species, is large and napiform or conical.

rum obtusis superiorum lanceolatis acutis; stipulis ovatis majusculis; pedunculis axillaribus solitariis unifloris folio longioribus; involucelli phyllis lanceolatis calycis laciniis lanceolatis attenuato-acuminatis dimidio brevioribus; carpellis (circ. 20) rotundatis undique rugoso-reticulatis apice incurvo complanato brevissime rostellatis omnino clausis. — *Gray, Gen. Ill.* 2. *t.* 217, *ined.* Nuttallia involucrata, *Nutt. ex Torr. in Ann. Lyc. N. Y.* 2. *p.* 172. Malva involucrata, *Torr. & Gray, Fl.* 1. *p.* 226. — Plains, from the Platte to Texas and west to the Rocky Mountains. — I have for several years had this handsome species in cultivation in the Cambridge Botanic Garden, from seeds taken from specimens gathered by Col. Fremont. It forms a very large root, which stands the winter well in the open air. The showy flowers are cherry-red with a tinge of purple, deeper colored and one third smaller than in C. Papaver, and are produced from spring until late in autumn. On prolonged flowering stems the upper leaves are abortive, and a membranaceous bract, formed of the two united stipules, subtends the peduncle.

§ 2. EUCALLIRRHOËS. Involucellum nullum, vel in M. Papavere 3–1-phyllum sæpeque a flore pl. m. remotum. Carpella rostro subuncinato viridi atque processu interno conspicuo donata. Pedunculi uniflori, apicem versus sæpe articulati.

* *Involucellum* 1–3-*phyllum, nunc in eadem stirpe nullum.*

3. C. PAPAVER: strigoso-hirsutula; caulibus e radice tuberosa adscendentibus gracillimis; foliis radicalibus subcordatis 3–5-fidis lobis oblongis paucidentatis, caulinis digitato-5–3-partitis, laciniis lineari-lanceolatis plerumque integerrimis; pedunculis axillaribus longissimis remotis; calycis laciniis parce hispidis ovato-lanceolatis attenuato-acuminatis; carpellis rugoso-reticulatis glabris rostro brevi incurvo apiculatis clausis. — Malva Papaver, *Cav. Diss.* 2. *p.* 64. *t.* 15. *f.* 3; *Torr. & Gray, Fl.* 1. *p.* 226 (excl. syn. sub C. triangul. citat.). M. nuttallioides, *Croom in Sill. Jour.* 26. *p.* 313. Nuttallia Papaver, *Graham in Bot. Mag. t.* 3287; *Hook. in Jour. Bot. l. c.* — Florida and Georgia to Texas, Arkansas, &c. Not rare in cultivation. Petals violet-red, an inch and a half long.

* * *Involucellum omnino nullum.*

4. C. DIGITATA (Nutt.): glabriuscula, subglauca; caulibus adscendentibus gracillimis; foliis digitato-5–7-partitis, laciniis linearibus prælongis integerrimis rariusve 2–3-fidis, supremis simplicioribus; pedunculis axillaribus longissimis; calycis laciniis ovato-lanceolatis acuminatis; carpellis dorso pilosulis, cæt. ut in C. Papavere; floribus minoribus. — *Nutt. in Jour. Acad. Philad.* 2. *p.* 181. Nuttallia digitata, *Hook. Exot. Fl.* 3. *t.* 171, non *Bart.* Malva digitata, *Torr. & Gray, l. c.* — Prairies of Arkansas and Texas. Not well known. The fruit is smaller, and the beak of the carpels rather longer, than in the last, but smaller than in the following, from which it also differs in the rugose-pitted carpels, and in being less crested on the back, at the origin of the beak.

5. C. PEDATA: caule glabro erecto; foliis radicalibus imisque 5–7-fidis rotundatis, superioribus 3–5-partitis, segmentis laciniato-lobatis vel incisis, supremorum integriusculis seu integerrimis; pedunculis paniculato-racemosis vel corymbosis, calycis glabri laciniis acuminatissimis; carpellis lævibus glabris dorso ad originem rostri maximi cristato-3-crenatis e basi subdehiscentibus. — *Gray, Gen. Ill.* 2. *t.* 218. Nuttallia pedata, *Nutt. in Hook. Exot. Fl.* 3. *t.* 172. N. digitata, *Bart. Fl. N. Amer.* 2. *t.* 162, quoad tab. Malva pedata, *Torr. & Gray, l. c.* excl. β. — Prairies of Arkansas, near Fort Smith, &c., *Nuttall.* Texas, *Lindheimer.* Cultivated in the Cambridge Garden from Texan seeds, where it flowers the first year like an annual, but also

†77. C. INVOLUCRATA, var.; with the leaves less dissected. Low and moist places, Rabbit's Ear and McNees Creeks.

forms a thickened perennial root. The corolla is cherry-red (turning purplish in drying), handsome, 1½ to 2 inches in diameter. Petioles often hirsute. Head of fruit smaller than in the last. — Well characterized by the smooth carpels, with a very large and thick beak.

6. C. MACRORHIZA: caulibus strigulosis humilibus e radice napiformi; foliis radicalibus oblongo-cordatis, primariis crenatis integris, sequentibus hastato-lobatis varie incisis, caulinis pedato-3–5-partitis segmento intermedio majore 3–7-fido vel laciniato; pedunculis corymbosis foliis sæpe brevioribus; floribus parvulis albidis; calycis strigosi laciniis ovato-lanceolatis; carpellis rugosissimis. — Sida macrorhiza, *James! Mss. in Herb. Torr.* Malva pedata β? umbellata, *Torr. & Gray! Fl.* 1. *p.* 227; *Hook.! Lond. Jour. Bot.* 6. *p.* 76. — Plains of the Platte, *Dr. James*, *Fremont*, *Geyer*. — An entirely distinct species. The numerous stems, about a foot long, spring from a large edible root, which attains the diameter of from three to five inches. The peduncles are seldom two inches in length. The petals are white or nearly so, only half an inch long.

7. C. ALCÆOIDES: strigosa; caulibus erectis gracilibus; foliis "inferioribus triangulato-cordatis incisis" (*Michx.*), mediis hastato-5–7-partitis laciniatis, summis 3–5-sectis, segmentis linearibus; pedunculis corymbosis folia superantibus; floribus majusculis roseis vel albis; calycis hispidi laciniis triangulatis acutis; carpellis 10 hirsutulis dorso rugosissimis inferne dehiscentibus. — Sida alcæoides, *Michx.! Fl.* 2. *p.* 44; *Torr. & Gray! Fl.* 1. *p.* 234, *& Suppl. p.* 681. — Gravelly soil, Kentucky and Tennessee, *Michaux*, *Dr. Currey* (v. sp. in herb. Torr.). A foot high. Petals narrowly cuneiform, nearly an inch long. — Dr. Torrey (l. c.) noticed the conspicuous transverse dorsal process in the upper part of the cell of the carpel. It is, however, equally striking in the two preceding species, with which this is entirely congeneric. In these, also, the seed does not entirely fill the cell (below the process), and falling back somewhat the umbilical sinus is at length often directed obliquely upward more or less; but the structure and insertion are not as in Sida.

3. SIDALCEA, *Nov. Gen.*

Calyx involucello nullo nudus. Petala integra vel obcordata. Tubus stamineus apice duplex, nempe in phalanges 5 exteriores pluriantheriferas petalis oppositas, atque circiter 10 interiores vel filamenta subindefinita per paria coalita, solutus! Styli 5–9, introrsum stigmatosi. Ovulum in loculis solitarium, peritropo-adscendens. Capsula 5–9-cocca; carpellis membranaceis, reniformibus, muticis vel apiculatis, solubilibus, intus laceratione apertis. Semen adscendens, embryo arcuatus, et radicula infera ut in Malva. — Herbæ Am.-Bor. Occidentales; foliis rotundatis plerisque palmatifidis, radicalibus integriusculis; caule virgato; floribus roseo-purpureis albisve, racemosis.

Sidæ sp., *Lindl.*, *Nutt.*, *Torr. & Gray*, *Fl. l. c. no.* 14–17.

A genus well marked in habit and character; distinguished from Sida (to which the species have been referred on account of the naked calyx) by the ascending ovule and descending radicle as well as the unilateral stigmas, which occupy the whole inner face of the styles, as in Malva, &c.; from Malvastrum by the stigmas and the whole habit; from Callirrhoë by the beakless carpels; from Malva by the want of an involucre and the fewer carpels; and from all by the elimination of the stamens from the tube in the form of an outer and an inner series, and the combination of the filaments, at least of the outer series, into distinct and definite phalanges. This peculiarity is evident in all the species upon inspection, but is carried to the maxi-

in flower, August, with mature fruit. — This plant was also gathered by Lieut. Abert. The native country of Malva miniata, *Cav.* was not recorded. But that the plant is a

portion attached to the short axis, which is conspicuonsly 7 – 9-winged. The fruit is figured in *Gen. Ill.* 2. *t.* 224.

§ 2. Phalanges exteriores ex apice columnæ exserentes, sæpe bifidæ, in filamenta 4 – 6 usque ad medium vel profundiora fissæ; interiores e filamentis subindefinitis inferne binatim connatis.

* *Annuæ, paucifloræ.*

4. S. HARTWEGI: caule tenello subsimplici apice 2 – 4-floro inferne foliisque parvis 5-partitis glabratis, segmentis superiorum linearibus integris, imorum spathulatis apice interdum bilobis; bracteis minimis; calycis brevi-pedicellati tomentulosi laciniis triangulari-lanceolatis acuminatis; corolla lilacina. — California, *Hartweg* (No. 1669). — Plant 7 – 9 inches high. Segments of the leaves about half an inch long. Petals two thirds of an inch in length. Fruit unknown. — From the aspect and the disposition of the flowers, this plant would seem to be closely allied to S. diploscypha; but in the stamineal column it accords with the ensuing species.

* * *Perennes: flores virgato-racemosæ.*

5. S. HUMILIS: undique hispido-hirsuta; caulibus e radice tuberosa adscendentibus simplicibus (6 – 12 unc. altis); foliis radicalibus rotundis sinu apertis aut subtruncatis inciso-crenatis indivisis sublobatisve, caulinis (2 – 4) 5 – 7-partitis, segmentis apice trilobatis obtusis; racemo brevi (9 – 15-floro) basi foliato; calycibus pedicello longioribus, laciniis lanceolatis acuminatis; corolla roseo-purpurea. — Sida malvæflora, *Hook. & Arn. Bot. Beech. p.* 326; an *DC.?* — Var. β. humilior, foliis omnibus indivisis seu vix lobatis rotundato-reniformibus basi pl. m. truncatis. — California, *Douglas*, *Fremont*, *Hartweg*. β. From a Russian collection made in the Bay of San Francisco. — This species is not more than a quarter of the size of S. Oregana, with the leaves only an inch or little more in diameter, while the flowers are much larger, the petals being fully an inch in length. Fruit unknown.

6. S. OREGANA: caule virgato ($1\frac{1}{2}$ – 3-ped.) superne cinereo-puberulo sæpe paniculato; foliis (hirsutis v. glabratis) radicalibus reniformi-orbiculatis 7 – 9-lobatis, primariis sinu apertissimis vel truncatis, caulinis 3 – 7-partitis, segmentis 2 – 3-fidis lobis apice 3-dentatis vel summorum integerrimis; racemo prælongo tomentello; calycibus tomentosis pedicellum superantibus seu æquantibus, laciniis triangulari-ovatis acuminatis demum attenuatis; corolla rosea vel "rubra"; coccis fere lævibus angulo interno apiculatis. — Sida malvæflora, *Lindl. Bot. Reg. t.* 1036; *Hook. Fl. Bor.-Am.* 1. *p.* 108; *Torr. & Gray, Fl. l. c.*, vix *DC.* S. Oregana, *Nutt.! in Torr. & Gray, l. c.* (var. minor, glabrior). Nuttallia malvæflora, *Fisch. & Mey. Ind. Sem. Hort. Petrop.* 1837. Southern Oregon, *Douglas*, *Nuttall*, *Geyer*, *Mr. Spalding*. — Radical and lower leaves large, 3 or 4 inches in diameter. Petals half an inch in length.

7. S. NEO-MEXICANA: vide p. 23, No. 79.

8. S. CANDIDA: vide p. 24, No. 80.

4. NAPÆA, *Clayt.*

Flores dioici. Involucellum nullum. Calyx teres 5-dentatus. Tubus stamineus simplicissimus, in stamina 15 – 20 uniserialia solutus. Cætera Malvæ. — Herba procera; foliis palmato-multifidis laciniatis, radicalibus maximis; floribus parvis, umbellato-fasciculatis, albis.

N. DIOICA, *Linn. Spec.* 2. *p.* 686, & *Amœn.* 3. *p.* 18; *Gray, Man. Bot. N. U. S. p.* 69, & *Gen. Ill.* 2. *t.* 225. Sida dioica, *Cav. Diss.* 5. *p.* 278. *t.* 132. *f.* 1; *DC. Prodr.* 1. *p.* 465; *Torr. & Gray, Fl.* 1. *p.* 234

Sphæralcea would appear from the character of "capsulæ dispermæ," (although in fact only one seed commonly ripens,) and I suspect that this is the very species, although

& p. 681. — A well-marked genus, as founded by Clayton: but Linnæus subsequently added a second species (N. hermaphrodita & N. lævis; the Althæa ricinifolia, *Herm. Lugd. p.* 22. *t.* 23. Sida Napæa, *Cav. l. c.*), which is a true Sida in all its technical characters. The latter, Hermann states to have been raised from seeds brought from Virginia; but as it has long been widely diffused in cultivation, while it has nowhere been found wild in the United States, I suspect that it is not of North American origin.

5. MALVASTRUM, *Nov. Gen.*

Calyx nudus, seu bracteolis 1–3 setaceis caducis, raro involucello triphyllo persistente, stipatus. Stigmata terminalia capitellata. Tubus stamineus simplex, ovulum peritropo-adscendens, embryo semicircularis, atque radicula infera Malvæ. Carpella mutica vel rostrata. — Herbæ Americanæ; floribus coccineis, aurantiacis, aureisve, axillaribus, raro racemosis. Malvæ et Sidæ sp., *Auct.*

The propriety will scarcely be doubted of associating in a separate genus such closely related species as those of the first section, which have been arbitrarily and variably referred, sometimes to Malva and sometimes to Sida, but which are capable of being clearly and precisely distinguished from either. If the yellow-flowered species with a somewhat different habit and usually a manifest persistent involucre, which form the second section (the Chrysanthæ, *DC.*, &c.), are correctly referred to this genus, it will comprise a large number of species from tropical and South America, which need an elaborate revision. I enumerate below merely the North American species which are known to me.

§ 1. Flores miniati. Involucellum nullum, vel parvum, e bracteolis 1–2, rarius 3, setaceis plerumque caducis. Carpella mutica. — Herbæ stellato-incanæ, perennes.

1. M. COCCINEUM: vide p. 24. — Sida coccinea; and β. S. dissecta, *Nutt.*, etc.

2. M. GROSSULARIÆFOLIUM. — Sida grossulariæfolia, *Hook. & Arn. Bot. Beech. p.* 326. Malva Creeana, *Graham, in Bot. Mag. t.* 3698? (Of this I find no specimen in herb. Graham.)

3. M. MUNROANUM. — Malva Munroana, *Dougl. in Bot. Reg. t.* 1306. M. fasciculata, *Nutt.! in Torr. & Gray, Fl.* 1. *p.* 225.

4. M. FREMONTII (*Torr. ined.*): lana alba dense implexa undique tomentissimum; foliis rotundatis basi truncatis crenatis subtrilobis breviter petiolatis; floribus in axillis glomeratis subsessilibus, bracteolis involucelli 3 setaceis calyce lanatissimo brevioribus. — Interior of California, *Fremont.* The plant is apparently low and spreading, and extremely woolly, but the wool seems to be more or less deciduous from the adult leaves, which are nearly two inches broad. The unopened flower-buds resemble pellets of wool. The expanded corolla is an inch in diameter. Fruit unknown.

Along the Andes are numerous species, among which is Malva humilis, *Gillies! in Hook. Bot. Misc.* 3. *p.* 150; but the M. sulphurea, *Gillies! l. c.* is an involucellate Sida, of the same group as S. hederacea.

§ 2. Flores flavi. Involucellum sæpius triphyllum persistens. Carpella 1–3-cuspidata vel mutica.

5. M. WRIGHTII (sp. nov.): pube brevissima stellata undique lepidoto-cinereum; caulibus adscendentibus e radice perenni parce ramosis; foliis oblongo-ovatis dentatis obtusis basi rotundatis truncatisve petiolo duplo longioribus; pedunculis axillaribus solitariis unifloris brevissimis; bracteolis involucelli 3 ovatis vel subcordatis persistentibus tubo calycis adnatis lacinias ejusdem triangulari-ovatas acuminatas subæquantibus; carpellis 15–20 plano-compressis apice hirtis extus bilamellato-gibbosis, acie ventrali in cuspidem subulatam produc-

the flowers are not so large as is represented in the figure of Cavanilles. Our plant is herbaceous. — The Sphæralcea stellata, *Torr. & Gray, Fl. l. c.* is probably only a smaller-

ta. — Texas, *Mr. Charles Wright*, *Lindheimer!* — Stems 1 to 2 feet high. Leaves thickish, about 1½ inch long; the lower ones rounder. Peduncle one third of an inch in length, rather shorter than the calyx. Petals golden-yellow, oblique, three fourths of an inch long.

6. M. CARPINIFOLIUM. — Sida carpinifolia, *Linn. f. Suppl. p.* 307; *Cav. Diss.* 1. *t.* 134. *f.* 1; *DC. Prodr.* 1. *p.* 461; *St. Hil. Fl. Bras.* 1. *p.* 184; *Webb. & Berth. Canar.* 2. *p.* 37. S. planicaulis, *Cav. Diss. t.* 3. *f.* 11. S. spirlæfolia, *Willd. Enum. Suppl. fide Walp.* S. bracteolata, *DC.* and S. carpinoides, *DC. l. c.* Malva tricuspidata, *Ait. Kew. ed.* 2. 4. *p.* 210. M. subhastata, *Cav. Diss.* 2. *p.* 72. *t.* 21. *f.* 3; *St. Hil. l. c. p.* 214. M. Americana, *Cav. l. c. t.* 22. *f.* 2. M. Domingensis, *Spreng. in DC. l. c.?* — Key West, *Blodgett!* Texas, *Lindheimer! Wright!* Mexico, *Coulter! Gregg!* &c. — Of the greater part of these synonymes I entertain no doubt. The native Texan specimens, and those in cultivation raised from Texan seeds, which, having comparatively simply toothed leaves, the lower broadest at the base or deltoid-ovate, represent the Malva tricuspidata and the Sida carpinoides of De Candolle, agree far too closely with S. carpinifolia from Madeira (which is probably of American origin) to allow of a specific distinction. The calyx in all is tribracteolate, or only 1–2-bracteolate in some of the later flowers. The fruit appears to be absolutely alike in both. The depressed capsule consists of about 10 (8–11) conduplicate-reniform carpels with a very deep ventral sinus, armed with two short cusps or points on the back, and with a much longer and setaceous apical one ("carpellis 3-cuspidatis," and "carpellis dorso breviter bicornutis et basi interna 1-aristatis"), which in dehiscence is bipartible (then "carpellis biaristatis"). The seed is deeply reniform and conformed to the cell, and the embryo semiannular, with the radicle inferior and centripetal.

(M. SPICATUM, = Malva spicata, *Linn.*, which was gathered by Dr. Gregg at Monterey, Mexico, has somewhat similar, but pointless, carpels.)

7. M. ANGUSTUM: annuum, appresse pilosum; caule gracili; foliis lanceolatis vel lineari-oblongis petiolatis rariter serratis; stipulis setaceis; pedunculis axillaribus plerumque solitariis circ. longitudine petiolorum: bracteolis involucelli 2–3 setaceis calyce brevioribus; segmentis calycis latissime ovatis subcordatis acuminatis post anthesin ampliatis; carpellis 5 obtusis omnino muticis puberulis lævibus membranaceis mox bivalvibus. — Sida hispida, *Pursh*, *Fl.* 2. *p.* 452? *Hook.! Jour. Bot.* 1. *p.* 198. Malva perpusilla, *Nutt.! Mss. in Herb. Torr.* (spec. depaup.) — This is probably Pursh's plant; but I have not seen it from Georgia. Drummond gathered it at St. Louis, whence I have also received it from Dr. Engelmann; and Nuttall found depauperate specimens on the plains of Red River. The carpels and seed are reniform, and the radicle centripetal-inferior.

6. SIDA, *Linn.* (excl. sp.)

Calyx sæpius angulatus, nudus, rarove bracteolis 1–2 deciduis involucellatus. Tubus stamineus simplex. Stigmata terminalia capitellata. Ovulum in loculis solitarium, resupinato-suspensum! Capsula 5–15-cocca; carpella rectiuscula indehiscentia vel sæpius apice bivalvia, ab axi centrali tarde secedentia. Semen subtrigonum, umbilico sursum spectante. Embryo conduplicatus, curvatura infera, radicula (ventrali) cotyledonibusque superis! — Herbæ aut suffrutices (plerisque tropicis v. subtropicis); foliis sæpius indivisis.

Sida, *Kunth in H. B. K. Nov. Gen.* (excl. sp.); *Adr. Juss. in St. Hil. Fl. Bras.*

Malvinda, *Medik. Malv.* 23.

flowered variety of S. angustifolia. Sphæralcea rivularis, *Torr.! ined.* (Malva rivularis, *Dougl.*) has been ascertained by Dr. Torrey to be the same as S. acerifolia, *Nutt.* Malva vitifolia, *Cav.* is probably another species of the genus nearly allied to the last. S. incana, *Torr. ined.* gathered by Lieut. Abert in New Mexico, and also by Wislizenus, is perhaps too nearly related to our No. 78, but more canescent with a closer and finer pubescence: S. Emoryi, *Torr. ined.* is still another allied species, with hastate or triangular leaves and a rougher pulverulaceous tomentum. S. pedata, *Torr. ined.*, gathered in Fremont's third expedition, has 3–5-sected leaves; the divisions all cuneiform, 3-lobed and incised.

79. Sidalcea Neo-Mexicana (sp. nov.): caule virgato gracili superne glabro inferne cum petiolis foliisque sparsim hirtellis; foliis radicalibus orbiculatis sinu apertis leviter 5–9-lobatis vel insico-crenatis, primariis basi subtruncatis, caulinis infimis profunde 7–9-fidis superioribus 5–3-partitis, segmentis 3-lobatis apice dentatis, supremorum linearibus integerrimis; racemo multifloro; pedicellis strictis calyce hirsuto duplo longioribus; corolla lilacina; coccis lævissimis angulo interno mucronato-apiculatis. — Vide p. 20. Moist meadows, Santa Fé; June, July. (Also, a slender form with the lower leaves more divided, at San Juan de la Vaqueria, Tamaulipas, *Dr. Gregg.*) — Plant 12 to 18 inches high, at first simple, with a long, virgate raceme, soon producing axillary flowering

§ 1. Pseudo-Malvastrum. Involucellum e bracteolis 1–3 setaceis parvis, deciduum. Carpella omnino mutica. Stellato-incanæ, floribus flavis croceisve.

S. hederacea, *Torr.! ined.* = Malva hederacea, *Dougl. in Hook. Fl. Bor.-Am.* 1. *p.* 107. M. Californica, *Presl! Rel. Hænk.* 2. *p.* 121. M. plicata, *Nutt.! in Torr. & Gray, l. c.* M. obliqua, *Nutt.! Mss.* Sida obliqua, *Torr. & Gray! l. c.* — Southern Oregon, *Douglas, Nuttall.* California, *Hænke, Coulter, Fremont.*

S. sulphurea, = Malva sulphurea, *Gillies! in Hook. Bot. Misc.* 3. *p.* 149, from Mendoza, is a nearly related species; and some others from the same region usually referred to Malva probably belong here.

§ 2. Malvinda, *Medik.* Calyx omnino nudus, 5-angulatus, 5-fidus. Carpella pl. m. rostrata, 2–3-cuspidata vel aristata. Flores plerumque flavi.

S. spinosa, *Linn.*, et cæteris div. * & ** *Torr. & Gray, Fl. l. c.*, etc.

§ 3. Pseudo-Napæa. Calyx omnino nudus, teres, 5-dentatus. Flores umbellati-corymbosi, albi. Folia palmatifida.

S. Napæa, *Cav.* = Napæa hermaphrodita, *Linn.* (Vide p. 21.)

S. Hulseana, *Torr. & Gray, l. c.* (Abutilon Hulseanum, *Torr. ined.*) is probably Abutilon confertiflorum, *A. Rich.*

S. crispa, *Linn.* (which grows on Key West and in Texas) has 3–4-ovulate carpels, and is therefore an Abutilon, notwithstanding its close resemblance to Bastardia, to which Adr. Jussieu referred it.

A revision of the North American species of Sida, as thus restricted (of which there are several new or undetermined species from Texas, &c.), will be attempted on another occasion.

branches. Bracts mostly 3-cleft and as long as the pedicels. Calyx-lobes triangular-acuminate, growing longer and more slender with age, as in the S. Oregana. Petals nearly half an inch in length. It is a smaller and more slender plant than the S. Oregana. A full account of this genus is given in the subjoined note (p. 18 et seq.). The species have been for the most part referred to Sida, with which they have little in common excepting the naked calyx.

80. S. CANDIDA (sp. nov.): caule folioso inferne petiolisque parce hirtellis; foliis inferioribus et radicalibus orbiculatis sinu clausis 7-lobatis lævibus ciliolatis, lobis cuneato-rotundatis grosse 3–5-crenatis incisisve, supremis 7- (floralibus 3–5-) partitis, segmentis lanceolatis integris; stipulis ovalibus; racemo brevi compacto glandulosi-tomentoso; pedicellis brevissimis; calycis tomentosi laciniis ovatis obtusiusculis; corolla alba; coccis lævibus glabris angulo interno apiculo pubescente mucronatis. — *Gray, Gen. Ill. t.* 224. — Along Santa Fé Creek; June, July. Plant 18 inches high; the stems simple from a perennial creeping rhizoma, glabrous except the scattered bristly hairs below: the smooth leaves almost exactly orbicular in circumscription, 2 to 2½ inches in diameter. Raceme spicate, only 3 or 4 inches long, densely flowered, not elongating in fruit, leafy at the base, glandular-downy, as well as the calyx; the upper bracts linear or lanceolate and little longer than the pedicels: the latter are spreading, shorter than the calyx, 2 to 3 lines long. Petals apparently pure white, obovate, over half an inch long. Staminal column slender, hairy (as in the other species), the phalanges less distinct than in the foregoing. Anthers blue. Carpels 9 or 10, cochleate-reniform, minutely apiculate at the inner angle. — A remarkable variety of this fine species, having larger cauline leaves with a very open sinus, and subsessile flowers, was gathered by Col. Fremont in his third expedition, probably in the Rocky Mountains.

81, 82. MALVASTRUM COCCINEUM: humilis, incanum; caulibus e basi sublignosa ramosis diffusis; foliis trisectis tripartitisve, segmentis lateralibus sæpius bipartitis intermedio trifido, lobis oblongis linearibusve integris seu paucidentatis; floribus inferioribus solitariis rariusve geminis in axillis foliorum, superioribus in racemum strictum digestis; bracteis subulatis deciduis; bracteolis involucelli 1–2 setaceis fugacibus; coccis 9–12 clausis dorso subtuberculatis cano-tomentosis. — *Gray, Gen. Ill. t.* 219. Cristaria coccinea, *Pursh! Fl.* 2. *p.* 453. Malva coccinea, *Nutt.! Gen.* 2. *p.* 81; *Bot. Mag. t.* 1643. Sida coccinea, *DC. Prodr.* 1. *p.* 465; *Hook. Fl. Bor.-Am.* 1. *p.* 108; *Torr. & Gray! Fl.* 1. *p.* 235. — Var. *β.* DISSECTUM: nanum; foliis 3–5-partitis, segmentis 3–5-fidis lobisque anguste linearibus. Sida dissecta, *Nutt.! in Torr. & Gray, l. c.; Hook. & Arn.! Bot. Beech. Suppl. p.* 327. — Plains, &c., Santa Fé, and east to Rock Creek and Poñi Creek of the Canadian; June to September. In flower and fine fruit. Some varying

forms as to foliage are distributed under these numbers; under one of them there are a few specimens of the var. *dissecta*, or of forms that evidently connect the Sida dissecta of Nuttall with the S. coccinea. I have for several years cultivated this species, from seeds brought from the Upper Missouri by Mr. Sprague, and had ascertained that its radicle is inferior, as in Malva. — An account of the genus, of which this is one of the typical species, is given in the subjoined revision of the genera allied to Malva.

LINACEÆ.

83. LINUM PERENNE, *Linn.; Hook. Fl. Bor.-Am.* 1. *p.* 106. Santa Fé, in flower: May. Mora River, &c., in fruit; August.

† 84. L. BERLANDIERI, *Hook. Bot. Mag. t.* 3480 (sphalm. L. Berendieri); *Engelm. & Gray, Pl. Lindh. no.* 22. (L. annuum, *Nees in Neuwied. Trav.*) On the Cimarron River.

85. L. BERLANDIERI, var. with smaller flowers and more glaucous, rigid leaves. Specimens from dry and gravelly hills around Santa Fé, May, are entirely glabrous. Others, from the Cimarron River, &c., August, have a puberulent stem.

† 86. L. RIGIDUM, *Pursh, Fl.* 1. *p.* 210. Prairies, Upper Arkansas.

GERANIACEÆ.

87. ERODIUM CICUTARIUM, *L'Her.; DC. Prodr.* 1. *p.* 646. (E. cheilanthifolium. *Dougl. Mss.*) Santa Fé Creek; April to November.

88. GERANIUM RICHARDSONII, *Fisch. & Mey. Ind. Sem. Petrop.* 1837. (G. albiflorum, *Hook. Fl. Bor.-Am.* 1. *p.* 116. *t.* 40, & *Bot. Mag. t.* 3124; *Torr. & Gray, Fl.* 1. *p.* 207, non *Ledeb.* G. Hookerianum, *Walpers, Repert.*) Shady and moist places along Santa Fé Creek; June, July.

89. G. CÆSPITOSUM (*James*): perenne, humile; caulibus diffusis ramosis cum petiolis pedicellisque retrorsum pubescentibus; foliis parvulis rotundatis profunde 5-lobis (v. radicalibus 7-fidis) pubescentibus pallidis, segmentis cuneiformibus divaricatis inciso-lobatis; pedunculo prælongo pedicellis binis fructiferis declinatis quadruplo longiore; petalis obovatis integris purpureis intus secus nervos parce villoso-barbatis sepalis cano-puberulis aristatis paulo longioribus; filamentis patentibus basi pilosis calycem et stylos nudos tertia parte connatis superantibus; carpellis pilosiusculis; rostro puberulo. (G. cæspitosum, *James, in Long's Exped.* 2. *p.* 3, ex char. et loco natali.) — Santa Fé Creek, near irrigating ditches, at the foot of mountains; May to July; and six miles east of the Mora River; August. — A low species, producing numerous assurgent or decumbent stems (3–10 inches long), from a thickened caudex; the leaves an inch, or at most two inches,

in diameter; the lower rounded-reniform in outline, the upper with the three principal segments divaricate. Corolla when fully expanded an inch or less in diameter, deep purple. — Well distinguished from its allies, as Dr. Engelmann remarks, by its long filaments, which are recurved-spreading in anthesis, and by the much elongated peduncles with comparatively short pedicels. Dr. Engelmann had indicated it as a new species; but I am so confident that it is the species noticed and imperfectly characterized by Dr. James, that I venture to revive his name, which, unless thus identified, must ever remain appended to the genus as a doubtful species, since no specimens of it exist in the collection made by him in Long's Expedition.

†90. G. Fremontii (*Torr.! in Pl. Frem. cum ic. ined.*): perenne; caulibus diffusis petiolisque retrorsum pubescentibus; foliis pubescentibus, superioribus profunde 3–5-fidis basi truncatis, infimisve sinu lato cordatis, radicalibus 7-fidis, segmentis 3-lobatis vel inciso-tridentatis mucronato-acutatis; pedicellis binis cum sepalis breviter aristatis glanduloso-pubescentibus pedunculum abbreviatum 2–3-plo superantibus, fructiferis subdeclinatis; petalis obovatis emarginatis (pallide purpureis) basi villosis ad venas parce villoso-barbatis; filamentis piloso-ciliatis stylos nudos ima parte solum connatos æquantibus; carpellis pilosis; rostro glanduloso-pubescente; seminibus tenuiter reticulatis. — Bottom lands of the Mora River, among shrubs; August. (Also in the Raton Mountains, *Lieut. Abert*, and probably farther north and west by *Col. Fremont.*) — Stems weak, at first erect, two feet high. Radical leaves 2 or 3 inches in diameter. Peduncles ½ to 2 inches, the pedicels 1 to 3 inches, in length. Flowers larger than in the preceding, from which it is readily distinguished. Dr. Engelmann remarks, that it is "rather too near G. pentagynum [which I suspect is G. incisum, *Nutt.*]; but may be distinguished by the slender stem, the broadly cordate or truncate base of the leaves, the shorter points of the sepals, &c. G. pentagynum is remarkably stiff and erect; the leaves deeply cordate, thick, silky with a fine appressed pubescence, and with prominent veins." Fendler's specimen, like one of Lieut. Abert's, is rather less pubescent and more diffuse than the original one of Fremont, the petals of which would appear to have been pale purple, if not white. In the others they are light purple, with deeper-colored veins.*

* Dr. Engelmann, who has attentively studied our Gerania, proposes the following disposition of the North American species of this group, viz.: —

Perennes; pedunculi biflori; valvulæ capsulæ læves, plus minus pilosæ; semina reticulata seu rugosa.

* *Pedicelli deflorati erecti seu suberecti.*

1. G. Richardsonii, *Fisch. & Mey.* (G. albiflorum, *Hook., Torr. & Gray*; non *Ledeb.*): caule erecto cum petiolis glabriusculo; pedicellis tenuiter glanduloso-pubescentibus; filamentis basi pilosis calycem et stylos pilosos tertia parte connatos æquantibus; valvis capsulæ parce pilosiusculis; rostro glanduloso-pubescente;

OXALIDACEÆ.

91. OXALIS VESPERTILIONIS, *Torr. & Gray, Fl.* 1. *p.* 679. Low places, Santa Fé; July, Aug. — Perhaps only a smaller-flowered variety of O. violacea, with more deeply lobed leaflets.

†92. O. STRICTA, *Linn.* Upper Arkansas; September.

BALSAMINACEÆ.

†93. IMPATIENS PALLIDA, *Nutt. Gen.* 1. *p.* 146. Western Missouri to Council Grove; August.

petalis albis. — Distinct from the next by the greater smoothness, the hairy and much less connate styles, the pilose (not short-ciliate) filaments, and the more delicately reticulated seeds.

2. G. MACULATUM, *Linn.:* caule erecto cum petiolis retrorso-piloso; pedicellis glanduloso-pubescentibus; filamentis basi breviter ciliatis calyce stylisque nudis ultra medium connatis subbrevioribus; valvis capsulæ longe pilosis; rostro glanduloso-pubescente.

3. G. PENTAGYNUM, *Engelm. in Wisl. Rep.:* caule erecto cum petiolis retrorso-pubescente; pedicellis glanduloso-pubescentibus; filamentis basi pilosis calycem et stylos nudos ima parte solum connatos æquantibus; valvis capsulæ pilosiusculis; rostro glanduloso-pubescente. — Eastern Mountains of New Mexico, on Wolf Creek. — Nearer G. maculatum than any of the others: distinguished by the characters above enumerated; also by the finer, more closely adpressed pubescence, the smaller leaves with narrower segments and much more prominent veins; inner sepals with colored margins, emarginate or somewhat bilobed: seed not seen.

4. G. FREMONTII, *Torr.* — Vide supra, p. 26.

5. G. MEXICANUM, *Kunth.*

* * *Pedicelli deflorati declinati seu refracti.*

\+ *Flores violacei.*

6. G. CÆSPITOSUM, *James.* — Vide supra, p. 25.

7. G. GRACILE (sp. nov.): caule erecto divaricato-ramoso cum petiolis et pedicellis retrorso-piloso; filamentis basi piloso-ciliatis calyce et stylis pilosis ima parte solum connatis brevioribus; valvis capsulæ pilosiusculis; rostro pubescente. — Pine woods, on the mountains of Cosiquiriachi, State of Chihuahua; collected in October, by *Dr. Wislizenus.* — Resembling the last; but erect, more hirsute-pubescent; the flowers, fruit, and seed smaller; stamens shorter; styles hairy, more deeply divided; and the peduncles much shorter, mostly of the length of the pedicels. — Near G. Mexicanum, *Kunth?*

\+ \+ *Flores albidi.*

8. G. HERNANDEZII, *DC.:* caule divaricato-ramoso cum petiolis patentim piloso; pedicellis glanduloso-pilosis; filamentis basi breviter ciliatis calycem et stylos pilosos ad medium connatos æquantibus; valvis capsulæ parce pilosiusculis; rostro glanduloso-piloso. — Pine woods, on the mountains of Llanos, State of Chihuahua; collected in October, by *Dr. Wislizenus.* — Leaves $1\frac{1}{4}$ to 2 inches in diameter, the upper truncate at the base; peduncles as long as, or shorter than, the pedicels; flowers white, about 8 lines in diameter.

ZANTHOXYLACEÆ.

94, 95. Ptelea angustifolia, *Benth.! Pl. Hartw. no.* 42. Steep and rocky banks of the Rio del Norte: No. 95, in flower, May; No. 94, in fruit. "Shrubs from 7 to 10 feet high: leaves of an agreeable odor." — The foliage becomes smooth and shining above with age. The fruit (which is wanting in the Hartwegian specimens) is much smaller and more emarginate than in P. trifoliata; and, like that species, it is frequently tricarpellary.

ANACARDIACEÆ.

†96. Rhus Copallina, *Linn.* Bottoms, along the Kansas River.

97. R. glabra, *Linn.* var.? R. lævicaulis, *Torr. in Bot. Ex. Exped. ined.* Steep mountain-sides, valley of Santa Fé Creek; July. — This clearly belongs to the Oregon species which Dr. Torrey distinguishes from R. glabra, on account of its short calyx, "scarcely half the length of the petals, linear-oblong anthers," &c. But a specimen from New York has nearly as short a calyx, while in others it is as long as the corolla. Being sub-polygamous plants, I suspect that the difference may be attributed to sex.

98. R. Toxicodendron, *Linn.; Torr. & Gray, Fl.* 1. *p.* 218. Valley of Santa Fé Creek, in the mountains; June.

99. R. (Lobadium) trilobata, *Nutt. in Torr. & Gray, Fl.* 1. *p.* 219. Rocky precipices, overhanging the Rio del Norte, in flower and fruit; May. Also on the Mora River, in ripe fruit; August. Shrub 3 to 8 feet high: possesses a peculiarly disagreeable odor. — Some (fruiting) specimens are nearly glabrous, as described by Nuttall: others are softly cinereous-tomentose. The ripe fruit is scarlet, and sparsely hirsute.

ZYGOPHYLLACEÆ.

100. Kallstrœmia maxima, *Torr. & Gray, Fl.* 1. *p.* 213. (Tribulus maximus, *Linn.*) Plains and waste places, Rio del Norte and around Santa Fé; May to Aug. — The inappropriate specific name was derived from the Tribulus terrestris major, *flore maximo* of Sloane; but the flower is far smaller than in T. cistoides, *L.* The latter (which grows on Key West, &c.) is a genuine Tribulus.

ACERACEÆ.

101. Acer tripartitum, *Nutt. in Torr. & Gray, Fl.* 1. *p.* 247. Shady places, near the creek, in the mountains east of Santa Fé; May, in flower; June, in fruit. A shrub 15 feet high, of slender growth. — A beautiful species, allied to A. glabrum,

*Torr.** The shoots of the season are purple, but become ash-gray the following year. The small leaves are green on both sides; the first which appear from the bud are 3-parted, but all the succeeding are quite divided into three subsessile leaflets.

102. NEGUNDO ACEROIDES, *Mœnch*, var.? ramulis petiolisque cinereo-glaucis; foliis omnibus trifoliolatis. — Mountains east of Santa Fé, on the creek, in low situations; April, May. Large trees; the lower part of the trunk generally very knotty, which seems to arise from the many wounds the tree receives early in spring, in order to draw the sap from it, which is collected in cavities cut into the trunk a little beneath the wounded places. — There are fine male and female specimens, and also the fruit.

CELASTRACEÆ.

† 103. STAPHYLEA TRIFOLIA, *Linn.* Twenty-five miles east of Council Grove.

† 104. CELASTRUS SCANDENS, *Linn.* On the Upper Arkansas.

105. PACHYSTIMA MYRSINITES, *Raf. in Amer. Month. Mag.* 1818. (Ilex? Myrsinites, *Pursh.* Myginda myrtifolia, *Nutt. Gen.* 1. *p.* 109. Oreophila, *Nutt. in Torr. & Gray, Fl.* 1. *p.* 258, not of *Don.*) Var. MAJOR (Myginda myrtifolia *β.* major, *Hook. Fl. Bor.-Am.* 1. *p.* 120. *t.* 41, the right-hand figure). Valley of Santa Fé Creek, in the mountains, at the foot of precipices; May, June, in flower only. A foot high. Leaves thrice the size of those of the ordinary Oregon plant (which I have not seen so strongly serrate as in Hooker's figure), the larger even an inch and a half long, and more inclined to be acute; the flowers also rather larger.

RHAMNACEÆ.

106. CEANOTHUS FENDLERI (sp. nov.): intricato-ramosissimus; ramis ramulisque teretibus gracilibus sæpe spinescentibus cinereo-puberulis demum glabratis lævibus; foliis parvulis ($\frac{1}{3}-\frac{1}{2}$ unc. longis) ovalibus seu ellipticis obtusis integerrimis eglandulosis trinervis subtus sericeo-canescentibus supra glabriusculis viridibus; glomerulis densis sessilibus; floribus glabris albis. — Mountains east of Santa Fé, in sunny places; June (in flower), and July, in fruit. Shrub about a foot and a half high and two feet in diameter. — Allied to C. depressus, *Benth. Pl. Hartw. no.* 29; but much more slender, the Thyme-shaped leaves smaller and not glandular, &c. Fruit about as large as in C. Americanus.

* To this species belongs A. Douglasii, *Hook.! Pl. Geyer, l. c. p.* 77. *t.* 6; as already stated in *Suppl. to Fl. N. Amer. p.* 684. Geyer's specimens, like those which I also have from Mr. Spalding, differ only in their larger leaves.

VITACEÆ.

107. Vitis riparia, *Michx.* Rocky precipices of the Rio del Norte; May, in flower.

108. Ampelopsis quinquefolia, *Michx.* Santa Fé to Mora River.

POLYGALACEÆ.

†109. Polygala sanguinea, *Linn.; Torr. & Gray, Fl.* 1. (*Suppl.*) *p.* 670. Low prairies, near Las Vegas, New-Mexico; August.

110. P. alba, *Nutt.* (P. Beyrichii, *Torr. & Gray, Fl.* 1. *p.* 130.) From Rabbit's Ear Creek to Willow Bar; August.

LEGUMINOSÆ.

111. Vicia truncata, *Nutt. in Torr. & Gray, Fl.* 1. *p.* 270; the slenderer forms also V. sparsifolia, *Nutt. l. c.* — From Santa Fé east to the head-waters of the Canadian River. — Perhaps an extreme, narrow-leaved form of the next; the lower leaves of which often have linear leaflets.

†112. V. Americana, *Muhl.* (Also V. Oregana, *Nutt. l. c.*) Santa Fé; June.

†113. V. micrantha, *Nutt. l. c.*, var. foliolis minoribus. Deep, rocky ravines of the Rio del Norte; May.

†114. Cicer Arietinum, *Linn.* Santa Fé; in cultivated grounds.

115. Lathyrus polymorphus, *Nutt. Gen.* 2. *p.* 97. (L. decaphyllus, *Pursh.*) Valley of Santa Fé Creek, abundant near irrigating ditches; May, in flower; July, with ripe fruit. Most of the leaves bear quite conspicuous tendrils. The showy flowers are an inch in length, and deep blue in the dried specimens. Mr. Fendler, however, states, in his notes, that they are of different colors, but generally of a deep crimson, which turns into deep blue in drying. He also remarks, that he never observed the plant to be eaten by any domestic animal.

116. L. palustris, *L.*, var. with the smaller and dull-colored flowers of L. myrtifolius. Base of mountains, Santa Fé; June.

†117. Phaseolus leiospermus, *Torr. & Gray, Fl.* 1. *p.* 280. On the Arkansas near Fort Mann; Sept. — The plant is an annual.

†119. P. Helvolus, *Linn.; Torr. & Gray, l. c.* Willow Bar; low, wet bank of the creek; August.

†118. Apios tuberosa, *Mœnch; DC. Prodr.* 2. *p.* 260. Council Grove, Arkansas; August.

† 120. Amphicarpæa monoica, *Ell. Sk. 2. p. 223.* Council Grove; August.

121. Glycirrhiza lepidota, *Nutt. Gen. 2. p. 106.* Prairies, in low places, twelve miles east of Council Grove, and in waste places around Santa Fe; July, August.

122. Psoralea floribunda, *Nutt. in Torr. & Gray, Fl. 1. p. 300.* Upper Arkansas to San Miguel, in high prairies; Aug., Sept.

123. P. argophylla, *Pursh, Fl. 2. p. 475; Hook. Fl. Bor.-Am. t. 53.* Between Willow Bar and the Cimarron River; August.

† 124. Amorpha canescens, *Nutt. Gen. 2. p. 92.* Prairies, around Santa Fé.

125. A. canescens β. leptostachya, *Engelm. Mss.* Woodlands, seven miles west of Las Vegas; August.

126. A. fruticosa, *Linn.* var. (A. nana, *Bot. Mag. t. 2112.* See remarks in *Torr. & Gray, Fl. 1. p. 690, Suppl.*, under A. nana). From 120 miles west of Independence to Pawnee Fork; August (in ripe fruit). Shrub three to five feet high. Ovary with two collateral ovules in this genus, and in Eysenhardtia.

127. Dalea alopecuroides, *Willd.; DC. Prodr. 2. p. 244.* Low prairies, &c., Santa Fé; also on the Arkansas River; July to September.

128. D. lanata, *Spreng. Syst. 3. p. 327.* (D. lanuginosa, *Nutt. in Torr. & Gray, Fl. 1. p. 307.*) Low, sandy places in the prairies, near the Cimarron River; August.

129. D. aurea, *Nutt. Gen. 2. p. 101.* Prairies, from Las Vegas to the Upper Spring on the Cimarron; August.

† 130. D. nana (*Torr. ined.*): caulibus e basi ramosis diffusis humilibus foliisque sericeo-incanis; foliolis 5 oblongis vel obovatis; spicis oblongis laxiusculis sericeo-villosissimis subsessilibus; bracteis et floribus fere D. aureæ. — Sandy soil, Willow Bar, on the Cimarron; August. Collected in the same region by Fremont in 1845; also by Lindheimer and Mr. Wright in Western Texas in 1847. It appears like a dwarf D. aurea (4 to 6 inches high); but the diffusely spreading stems are repeatedly branched and leafy to the spikes, which are smaller and much less dense.

131. D. laxiflora, *Pursh, Fl. 2. p. 741.* Prairies, on the Cimarron, &c.; August. — D. penicillata, *Moric. Pl. Nouv. Amer. t. 45*, from Texas, appears to be the same species. Dr. Torrey has furnished me with specimens of an allied species from Monterey, Mexico.*

* Dalea pogonathera (sp. nov.): pusilla, glaberrima, perennis; caulibus depressis; stipulis setaceis; foliolis 5–7 oblongo-linearibus subtus rachique grosse nigro-glandulosis; spicis oblongis densifloris; bracteis ovatis carinato-concavis mucronato-acuminatis glabris parce glanduliferis margine scariosis tubum calycis sericeo-villosi laciniis setaceis plumosissimis breviorem æquantibus; petalis purpureis, carina alas et vexillum multo superantibus; staminibus 10. — Around Monterey, Mexico, *Dr. Edwards* and *Major Eaton.* — The specimens (perhaps depauperate) are only 3 or 4 inches high, and might be taken for a starved state of

132. D. FORMOSA, *Torr. in Ann. Lyc. New York*, 2. *p.* 178, and in *Emory's Report, cum ic.* Dry, gravelly hills, in sunny places, Santa Fé; May to June. A dwarf shrub, from half a foot to one foot high; the stem and branches very crooked and intricately entangled.

133. D. JAMESII, *Torr. & Gray, Fl.* 1. *p.* 308. Gravelly hills, in sunny places, from Santa Fé east to McNees Creek; May (in flower) and August (in fruit). — The D. laxiflora; but the spikes (one inch long) are thicker and denser, the bracts of a different form and not so coriaceous and black-glandular; the petals are purple, and the tenth stamen is present. (While this sheet is passing through the press, I am furnished with specimens from Western Texas, collected by Mr. Wright, who informs me that it occurs rather abundantly from Seguin to the Rio Grande.)

From Dr. Engelmann I have received the following apparently undescribed species of this genus, collected by Dr. Wislizenus, namely: —

DALEA LEUCOSTACHYS (sp. nov.): suffruticosa, humilis, cinereo-puberula; caulibus ramosis glandulis prominulis conspersis; stipulis setaceis caducis; foliolis 5–7 oblanceolatis cuneato-oblongisve obtusis petiolulatis glabratis utrinque (supra creberrime) glanduloso-punctatis; spicis ad apicem paniculatis pedunculatis cylindricis densis; bracteis subulatis calyce pubescente breviter 5-fido brevioribus deciduis; petalis albis, vexillo suborbiculari alas et carinalia consimiles fere æquante. — At Cosiquiriachi, in the Sierra Madre, *Dr. Wislizenus;* flowering in September. — Shrub 2 or 3 feet high; branches leafy to the top, where it bears several handsome spikes (which may be likened to those of Eysenhardtia) of white flowers: the petals are two or three lines in length, besides the slender claw. Leaflets one half to three fourths of an inch long. In a single flower I found six petals and two pistils. The claws of the wings and keel-petals are adnate to the stamineal column only at the base (not to the middle, as the genus is characterized); and the insertion is little higher in the following and in several other species. The anthers are commonly tipped with a gland, which in this species is remarkably conspicuous.

D. WISLIZENI (sp. nov.): sericeo-villosa; caulibus seu ramis gracilibus erectis; stipulis setaceis; foliolis 7–9-jugis parvulis (2 lin. longis) oblongis obtusiusculis pulchre sericeis subtus cauleque parce nigro-glanduliferis; spicis solitariis pedunculatis oblongis; bracteis lanceolato-setaceis calycibusque æquilongis sericeo-villosissimis; laciniis calycis tubo longioribus subulato-aristatis basim versus utrinque unisetulosa; petalis albo-purpureis omnibus juxta apicem glandula lineari notatis, carina alas dimidio vexillum multo superantibus. — Llanos, in the Sierra Madre, west of Chihuahua, *Dr. Wislizenus;* flowering in October. — Stems or branches a foot high. Flowers showy, one third of an inch long.

D. SCOPARIA (sp. nov.): cano-tomentulosa deinde glabrata, undique pustulato-glandulifera; caulibus (basi fruticosis?) ramosissimis gracilibus rigidis inferne denudatis; foliis ramealibus plerumque simplicibus spathulato-linearibus subsessilibus margine revolutis parvulis rariusve trifoliolatis; stipulis minimis; capitulis 5–10-floris laxiusculis pedunculatis corymboso-paniculatis; bracteis minimis ovatis caducis; calycibus incanis breviter 5-dentatis gibboso-arcuatis; petalis pulchre violaceis omnibus ad apicem uniglandulosis subæquilongis. — Jornado del Muerto, between Santa Fé and El Paso del Norte, *Dr. Wislizenus;* August. — A remarkable, Broom-like species; the rigid stems, &c., roughened all over with large, pustulate glands; the diffuse branchlets terminated by small and globular heads of (in the specimens) deep violet flowers. Petals two lines long; the oblong-oval vexillum as long as the keel.

stems of this curious dwarf species are cæspitose from a branched and tortuous caudex. The corolla, which is at first yellow, appears to turn purple in fading.

134. PETALOSTEMON VILLOSUM, *Nutt. Gen. 2. p. 85*; *Torr. & Gray, Fl. 1. p. 310.* Sandy soil, between the crossing of the Cimarron and the Middle Spring; August.

135. P. GRACILE, *Nutt. in Jour. Acad. Philad. 7. p. 92.* Santa Fé; on the Cimarron; and west of Independence, Missouri. — Some of the specimens, I know not from which locality, have awn-pointed or cuspidate bracts, which are longer than the flower-buds, and are scarcely, if at all, distinguishable from P. candidum, to which the whole species is perhaps too closely related.

† 136. P. CANDIDUM, *Michx. Fl. 2. p. 49. t. 37. f. 1.* Prairies, near the upper ferry of the Kansas River.

† 137. P. VIOLACEUM, *Michx. Fl. 2. p. 50. t. 37. f. 2*: — a pubescent variety; the calyx very silky-villous. Five miles west of Las Vegas, New Mexico; August.

138. P. VIOLACEUM, *Michx.*: — a more slender glabrous form, with shorter points to the bracts; otherwise nearly as the last. Between Willow Bar and Middle Spring, Cimarron, in sandy soil.

† 139. P. MACROSTACHYUM, *Torr. in Ann. Lyc. New York, 2. p. 176*; *Torr. & Gray, Fl. l. c.* A single specimen, with white flowers (those of P. ornatum, *Dougl.* are violet). Prairie, 18 miles west of Lower Spring, Cimarron; August.*

140. TRIFOLIUM INVOLUCRATUM, *Willd.*; *DC. Prodr. 2. p. 204*; *Benth.! Pl. Hartw. no. 50*; non *Torr. & Gray.* Poñi Creek, between Bent's Fort and Santa Fé, and on Santa Fé Creek, near the water. — Well distinguished from T. tridentatum, *Lindl.*, by the longer calyx-teeth and corolla. The only species of the involucrate section which has been found (now for the first time in so high a latitude) east of the Rocky Mountains or the Andez.

141. MELILOTUS PARVIFLORA, *Desf.* Low grounds, around Santa Fé.

142. MEDICAGO SATIVA, *Linn.* Fields, around Santa Fé. — This and the last were undoubtedly introduced from Europe. From Dr. Gregg's collections, both appear to be naturalized throughout Northern Mexico.

143. HOSACKIA PURSHIANA, *Benth.* High prairies, Upper Arkansas.

† 144. ASTRAGALUS? or PHACA? A single specimen, without fruit. Between the Rio Colorado and Rock Creek; August.

† 145. ASTRAGALUS CANADENSIS, *Linn.* On the Kansas River, one hundred miles west of Independence.

* Dalea agastachys, *Moric. Pl. Nouv. Amer. t. 44* (1839) is Petalostemon obovatum, *Torr. & Gray.*

146. A. DIPHYSUS (sp. nov.) : subglaber, depressus, caulibus numerosis e radice perpendiculari crassa adsurgentibus ; stipulis triangularibus acuminatis scariosis basi petioli adnatis ; foliolis 9 – 10-jugis carnosulis obovato-oblongis sæpe retusis ; pedunculis folium æquantibus ; racemo spicato densifloro brevi ; pedicellis bractea ovato-subulata persistente calyceque cylindraceo brevioribus ; corolla cærulea ; leguminibus membranaceis inflatis ovatis acuminatis sursum arcuatis suturis utrinque introflexis subdidymis complete bilocellatis polyspermis nitidis. — Plains, around Santa Fé, in red sandy soil, of a low and depressed growth, but forming patches one or two feet in diameter ; April to May. Mr. Fendler further remarks, that he never observed this plant to be eaten by any animal whatever. — This species produces a thick cluster of stems, 6 to 10 inches high, from the same fleshy root, and in appearance is not unlike A. caryocarpus and A. trichocalyx, but is smoother, having only sparse and minute appressed hairs on the stems and petioles, and sometimes on the midrib of the otherwise glabrous leaflets ; and the flowers are smaller (barely half an inch long). The pods are remarkably different, being of a thin and membranaceous or papery texture, didymous and inflated, about an inch long at maturity, pointed and incurved. It is equally distinct from the little-known A. pachycarpus, *Torr. & Gray ;* which bears a legume that has evidently been succulent before ripening, and when dry exhibits the same thickened and cellular walls as those of A. caryocarpus and A. trichocalyx, with which it should be associated.

147. A. DIPHYSUS β. ALBIFLORUS. With the preceding, apparently differing only in the white flowers. The specimens show no fruit.

148. A. CYANEUS (sp. nov.) : subcaulescens ; caudice multicipiti ; stipulis triangularibus vel subulato-lanceolatis ; foliolis 9 – 14-jugis ovato-rotundis ovalibus oblongisve cum petiolis pube minuta strigulosa appressa utrinque griseo-canescentibus ; pedunculis scapoideis folia subæquantibus angulatis 8 – 12-floris ; pedicellis brevissimis bracteam subulatam æquantibus ; calyce pilis griseo-nigricantibus appresso-pubescentibus, dentibus subulato-setaceis tubo cylindrico dimidio brevioribus ; corolla cyanea ; leguminibus cartilagineis puberulis rugulosis oblongo-linearibus acuminatis sursum curvatis turgidis polyspermis sutura dorsali profunde sulcata introflexa incomplete bilocellatis, sutura ventrale extus prominente. — Santa Fé, on gravelly hills and low mountains among rocks ; April, May. — A larger plant than A. Missouriensis, which the species most resembles in habit, foliage, and flowers ; the mode of growth much as in the preceding, but almost acaulescent. Leaves crowded at the summit of the branches of the caudex or on the abbreviated flowering stems, 3 to 6 inches long ; the leaflets one fourth, or sometimes nearly one half, an inch in length, hoary with a close and fine strigulose pubescence. The peduncles or scapes are stout and erect, 4 to 8 inches long in fruit. The flowers are almost an

inch long, deep blue, or perhaps violet, and showy. The stout and thickish pods are ascending, an inch and a half in length, one fourth of an inch broad, at first scymetar-shaped, but at length turgid and dilated, with a very broad and deep groove on the convex side from the strong introflexion of the dorsal suture, while the ventral shows a salient ridge and is not at all introflexed. — In some respects this species accords with A. humilis, *Geyer* (*Hook. in Lond. Jour. Bot. l. c.*, — a name which, by the way, is preoccupied by Bieberstein); but that is said to have an ovate fleshy legume, and evidently belongs to the same section as A. caryocarpus. May it not be A. pachycarpus?

149. A. Missouriensis, *Nutt. Gen.* 2. *p.* 99. (A. melanocarpus, *Richards.! in Frankl. Jour.; Hook.! Fl. Bor.-Am.* 1. *p.* 150. Stony hills, Rio del Norte and at Santa Fé; May. — The mature legume is elliptical, compressed, margined, and with neither suture manifestly introflexed.*

† 150. A. Hypoglottis, *Linn.; Hook. & Arn. Bot. Beech. p.* 334. (A. goniatus, *Nutt.!*) Prairie, on the Mora River; August.

† 151. A. sp. Dry, gravelly hills near Santa Fé; May. A dwarf, canescent species, of which only a single small specimen was collected, in fruit only; so that it cannot be safely described, if new. The legumes are arcuate, nearly an inch long, canescently puberulent, deeply grooved at the dorsal suture, and 2-celled.

† 152. A. mollissimus, *Torr. in Ann. Lyc. New York*, 2. *p.* 178, *& Fl. N. Am.* 1. *p.* 337. Between McNees Creek and Cold Spring; August. — In fruit only; apparently a dwarfish form, with very densely silky-villous foliage. Dr. Gregg gathered it near Chihuahua and Lieut. Abert near Bent's Fort, on the Arkansas.

† 153. A. mollissimus, *Torr. l. c.* Ojo de Bernal; August. — In fruit and flower. Leaves, &c., much larger than in the last, and more nearly agreeing with the description of this species. The largest leaflets are even an inch and a half in length. The stipules cohere for nearly half their length with the base of the petiole.

† 154. Oxytropis Lambertii, *Pursh; Torr. & Gray, Fl.* 1. *p.* 339: — a variety with 7 to 13 leaflets and rather few and scattered flowers; nearly the same as No. 77 of Geyer's Oregon collection. Prairies, Mora River; August.

* A. distortus, *Torr. & Gray*, is found by Dr. S. B. Mead, in Mason county, Illinois. The mature legumes are longer than in the original Texan specimens, strongly arcuate rather than abruptly bent, and fully three fourths of an inch long, following the curvature, but much smaller than those of A. obcordatus. Those of the latter are somewhat laterally compressed, with an acute and salient ventral suture, as described in the *Flora of N. America*, and the dorsal suture merely sulcate, but little introflexed. In the former, the fully ripe legumes of Dr. Mead's plant are obcompressed, strongly sulcate along both sutures, with the dorsal so much introflexed as to become nearly or quite 2-celled.

† 155. O. CAMPESTRIS β. SPECIOSA, *Torr. & Gray, Fl. l. c.; Hook! Lond. Jour. Bot.* 6. *p.* 212. Between Rabbit's Ear and McNees Creeks; August. — Probably quite distinct from the European O. campestris.

156. ASTRAGALUS NUTTALLIANUS β. TRICHOCARPUS, *Torr. & Gray, Fl.* 1. *p.* 334. Bank of the Rio del Norte; May.

157. PHACA FENDLERI (sp. nov.): parce striguloso-puberula; caule gracili flexuoso angulato; foliolis 7–11-jugis oblongo-linearibus obtusis glabratis petiolulatis ($\frac{3}{4}$–1 unc. longis); stipulis triangulatis parvulis; racemis longe pedunculatis patentibus spiciformibus 10–20-floris laxis folium superantibus; floribus purpureis patulis; calycibus nigro-pubescentibus; leguminibus deflexis oblongis rectis turgidis fere glabris estipitatis. — Woodlands, in the mountains, between Santa Fé and Pecos; August, 1847. — Plant a foot high. Peduncles 5 or 6 inches long; half the length occupied by the flowers when developed: these are one third of an inch long, apparently violet-purple, on very short pedicels, and subtended by minute bracts. Calyx campanulate, with short triangular-subulate teeth, pubescent with minute dark hairs. Legume (immature) three fourths of an inch long, two lines broad, very minutely puberulent with white hairs, multiovulate, several-seeded. — Evidently allied to P. flexuosa, *Hook.*, and P. elongata, *Hook.*, perhaps too near to the former: but the flowers are larger, the calyx minutely black-haired and not sericeous, the legumes apparently membranaceous, and the whole plant almost glabrous.

† 158. Apparently a mere variety of the next, with broader and more retuse leaflets.

159. P. GRACILENTA (sp. nov.): perennis, canescenti-pubescens, humilis; caule erecto flexuoso superne ramoso; stipulis subulatis; foliis breviter petiolatis; foliolis 7–9-jugis cuneato-linearibus obtusissimis retusisve supra glabratis; pedunculo 10–20-floro folium æquante vel superante; calyce nigro-pubescente, dentibus subulatis brevibus; leguminibus chartaceis oblongis inflatis rectiusculis utrinque obtusis estipitatis cinereo-puberulis. — Bare, rocky hills, Santa Fé; April to June. — The specimen I possess is in fruit only, about 8 inches high, with a slender, flexuous stem. The flowers are said to be "pale purple." The legumes are three fourths of an inch long, terete, straight or slightly incurved, and one fifth of an inch in diameter. In habit and foliage it is much like Phaca annua of Geyer, and P. triflora, *DC.* (which Dr. Gregg has sent from Chihuahua, &c.); but the peduncles are larger, and the pods smaller, more chartaceous, and much less inflated.

160. P. MACROCARPA (sp. nov.): cinereo-puberula; caule crasso fistuloso ramoso striato-angulato adscendente; stipulis triangulari-lanceolatis distinctis; foliis rigidiusculis 1–5-foliolatis vel summis non folioliferis, rachi filiformi complanata, foliolis filiformi-linea-

ribus remotis; pedunculis folio longioribus; racemis multifloris; floribus decurvis majusculis (ochroleucis seu albidis); leguminibus elongatis lanceolatis membranaceis glabris turgidis rectis utrinque acutatis in stipitem calyce cylindraceo longiorem attenuatis polyspermis. — Rocky declivities, near Santa Fe; June. — Root apparently perennial. Plant one or two feet high, much branched, cinereous with a very minute appressed pubescence. In appearance the foliage is intermediate between that of P. pectinata and P. podocarpa; but the leaflets are much fewer than in either; more frequently only two or three, scattered along the flattened rachis. They are distinctly articulated, from half to three fourths of an inch long and about half a line wide. Flowers nearly as in P. pectinata, but the calyx is not dark-haired. The pods (which are not quite mature) are two inches long, including the stipe, apparently terete, and two lines in diameter, of a thin membranaceous texture, with neither suture introflexed, about 20-seeded.

161. P. PICTA (sp. nov.): annua, humilis, undique strigoso-incana; caulibus ramosis diffusis; stipulis triangulari-subulatis majusculis; foliolis 4–7-jugis anguste linearibus obtusis; racemis folio subbrevioribus 7–15-floris; dentibus calycis setaceis tubo vix brevioribus (corolla rosea vel albida, carina sæpius purpureo tincta); leguminibus ovalibus obtusis rectis membranaceis inflatis glabris purpureo-pictis breviter stipitatis oligospermis. — Loose, sandy soil on the banks of the Rio del Norte, especially among low shrubs; April (in flower) and June (in fruit). — Allied to P. longifolia, P. annua, *Geyer*, P. Hookeriana, &c., and with the same beautifully mottled legumes. The appressed hairs, which render the plant quite hoary throughout, are attached by a point below their middle. Stems 5 to 9 inches high, often branched from a straggling or creeping base, which has apparently been covered with loose sand. Leaflets one half to three fourths of an inch long, sometimes almost filiform. Flowers spreading, one fourth of an inch long, the young fruit pendulous. Pods three fourths of an inch long, very obtuse, straight, on a stipe about the length of the calyx. The flowers are twice as large as those of P. gracilenta, no. 159; which are pubescent and not stipitate nor mottled.

† 162. DESMODIUM SESSILIFOLIUM, *Torr. & Gray, Fl.* 1. *p.* 363. One hundred miles west of Independence, Missouri.

† 163. D. DILLENII, *Darlingt. Fl. Cest. p.* 414; *Torr. & Gray, Fl. l. c.* With the last.

164. LESPEDEZA CAPITATA, *Michx.* Dry prairies, Kansas River.

† 165. L. REPENS, *Torr. & Gray, l. c. p.* 366. Near Fort Leavenworth.

166. LUPINUS DECUMBENS, *Torr. in Ann. Lyc. New York*, 2. *p.* 191. Var. ARGOPHYLLUS: caule foliisque argyreo-sericeis, supra viridiusculis. — Plains, around Santa Fé; May to June, in flower; June to Aug., in fruit. — A foot high, a silvery white species; more so than in the original specimens of L. decumbens, which, imperfect as they are, I

am confident belong to the same species with ours. It is a very handsome plant, with flowers as large as in L. perennis, and apparently light blue. A characteristic of the species is the saccate, almost spurred, base of the calyx, which is quite as conspicuous as in L. laxiflorus, next to which it should be placed. The same plant was gathered near the sources of the Platte in the first expedition of Col. Fremont, and forms part of what was called L. ornatus in the Botanical catalogue of that expedition.

167. Same as the last (and growing with it), with the flowers light rose-color. — The flowers in the dried specimen appear to be ochroleucous; perhaps it is the L. argenteus of Pursh (which has not been really identified); but it cannot be the L. argenteus of Agardh.*

† 169. L. DECUMBENS, *Torr.*; with the leaflets glabrous above; the flowers apparently pale, as large as those of no. 166 and no. 167. Poñi Creek, in low prairies.

168. L. LAXIFLORUS, *Dougl.?* with oblong-lanceolate, almost entirely glabrous leaflets. — Valley of Santa Fé Creek, in the mountains; June, July.

170. THERMOPSIS MONTANA, *Nutt. in Torr. & Gray, Fl.* 1. *p.* 388. Foot of mountains, in low, moist places, valley of Santa Fé Creek, five miles above Santa Fé; May, June. — The wings and keel often acquire a blue tinge in drying; as in specimens from Oregon, by Mr. Spalding, of T. fabacea, *Hook! in Pl. Geyer*, which are not well to be distinguished from this species.

† 171. SOPHORA SERICEA, *Nutt. Gen.* 1. *p.* 280. Prairies, from the Mora River to Cold Spring, on the Cimarron; August.

† 172. CERCIS CANADENSIS, *Linn.* Council Grove; in the creek bottom.

173. HOFFMANSEGGIA JAMESII, *Torr. & Gray, Fl.* 1. *p.* 393. Near the ford of the Cimarron River; Aug. — In ripe fruit, with some flowers.

† 174. CASSIA CHAMÆCRISTA, *Linn.* Cimarron River; August.

† 175. C. MARILANDICA, *Linn.* Council Grove; August.

† 176. KENTROPHYTA MONTANA, *Nutt. in Torr. & Gray, Fl.* 1. *p.* 353. Gravelly hill-sides, Santa Fé; June.

† 177. SCHRANKIA ANGUSTATA, *Torr. & Gray, Fl.* 1. *p.* 400. Council Grove; August.

178. DESMANTHUS BRACHYLOBUS, *Benth. in Hook. Jour. Bot.* 4. *p.* 358. (Darlingtonia, *DC., Torr. & Gray, l. c.*) On the Cimarron River, &c.

179. D. JAMESII, *Torr. & Gray, Fl.* 1. *p.* 402. Santa Fé to Rayado Creek, on the route to Bent's Fort; in gravelly soil.

* No. 390 of Geyer's Oregon Collection was given as Lupinus albicaulis by Hooker, probably by a slip of the pen, as my specimens are L. leucophyllus, *Lindl.*, with one of L. sericeus?

† 180. CALLIANDRA? HERBACEA (*Engelm. Mss.*): "caule humili erecto flexuoso adpresse piloso; stipulis lanceolatis nervosis; foliis longe petiolatis; pinnis 3–4-jugis; foliolis 20–30 obliquis oblongis obtusiusculis ciliatis supra glabris subtus laxe reticulatis adpresse pilosis; capitulis florum binis folio brevioribus, pauci- (8–10-) floris; calycibus tubulosis 4–5-dentatis, dentibus tubo subbrevioribus ciliatis; tubo corollæ calyce triplo longiore dentibus obtusiusculis apice parce pilosis; staminibus 25–30 corollam longe superantibus. — Between San Miguel and Las Vegas; flowering in August. — Plant apparently perennial, 6 inches high: leaves with petioles 3 inches long: leaflets 3 lines long: heads about one inch in diameter, on peduncles of one inch in length. Flowers polygamous: a fertile flower which I examined had four calyx and four corolla teeth, a sterile one, five teeth: stamens united at the base, more so in the fertile flower. Ovary elongated, with many ovula and the tumid sutures glabrous." *Engelm.* — There is another apparently new species in the collections of Wislizenus and Gregg.*

181. MIMOSA BOREALIS (sp. nov.): fruticosa, erecta, glaberrima; ramis aculeis infra stipularibus solitariis validis patentissimis rectiusculis armatis; foliis parvis, pinnis 1–2-jugis petiolum æquantibus, foliolis 4–5-jugis ovalibus vix inæquilateralibus crassiusculis (floribus ignotis); leguminibus oblongis stipitatis 2–4-spermis glabris margine sparsim uncinato-aculeatis, valvulis in articulos 2–4 secedentibus. — Hill-side, Upper Spring, on the Cimarron; August. — The specimens have ripe fruit, but no flowers. They appear to belong to an upright shrub. The branches are armed with very stout and slightly hooked, scattered, infrastipular spines. The common petiole is only half an inch in

* C. CHAMÆDRYS (*Engelm. Mss.*): "fruticosa, humilis; ramulis petiolisque brevibus eglandulosis pubescentibus; foliis 2–3-jugis rarius 1-jugis; foliolis 6–12-jugis minutis ovatis obtusis seu acutiusculis supra glabris subtus pilosis; stipulis subulatis rigidis erectis subpersistentibus; capitulis breviter pedunculatis singulis binisve pauci- (4–8-) floris; floribus hermaphroditis; calyce campanulato subinæqualiter 5-dentato, dentibus obtusis pilosis; corolla tubuloso-campanulata calycem ter quaterve superante ad medium 5-fida extus parve pilosa (purpurea), lobis lanceolatis acutis subæqualibus; staminibus polyadelphis basi in tubum connatis elongatis tenuissimis circiter 35; ovario lineari-lanceolato suturis incrassato glaberrimo; stylo tenuissimo capillaceo stamina superante; stigmate capitato; legumine lineari-lanceolato stipitato acuminato (immaturo) albo-sericeo marginibus valde incrassatis subnudo. — Chihuahua, *Dr. Wislizenus*, *Dr. Gregg*; flowering in April. — Stems squarrose, much branched, 3 to 12 inches high, stout. Leaves 4 to 8 lines long: leaflets $\frac{3}{4}$ to 1 line long. Peduncles 3 to 4 or 5 lines long. Stamens an inch long. Legume $1\frac{1}{2}$ to 2 inches long, $\frac{1}{4}$ inch wide, white silky, while the ovary is perfectly glabrous! — The specimens of Dr. Wislizenus, from Bachimba, are smaller, more branched; the leaflets smaller, obtuse, more hairy, and not more than bijugate, the lobes of the corolla recurved. Dr. Gregg collected in the Cañon of Ojito larger specimens, with often acutish leaflets, and larger flowers, with the lobes of the corolla erect. — Apparently near C. Californica and C. Xalapensis, *Benth.*, but well distinguished by the very small leaflets, &c." *Engelm.*

length, and usually bears a single pair of small pinnæ; when there are two pairs, these are somewhat approximate. The leaflets are only about one line in length, thickish, obscurely veiny, and perfectly smooth. The joints of the flat pod are one fourth of an inch in diameter. — The locality is somewhat north of lat. 37°; consequently this is the most northern species of the genus known. It is apparently quite distinct from any of those described in Mr. Bentham's Synopsis (in *Hook. Jour. Bot. vol.* 4). — As this sheet is going to press, I have the opportunity of examining flowers of this species, sent me by Dr. Engelmann from a specimen gathered on the Upper Canadian in April, 1848, by Mr. Gordon. They have a truncate purplish calyx, five spatulate-oblong petals which are separate to the base, and ten distinct stamens.

ROSACEÆ.

† 182. Prunus Americana, *Marsh.; Darlingt. Fl. Cest. p.* 287. Rock Creek bottom.

183. Armeniaca vulgaris, *Lam.* A naturalized tree along the valley of Santa Fé Creek, near dwellings; flowering in April.

† 184. Prunus domestica, *Linn.* Santa Fé; naturalized around dwellings.

185. Cerasus demissa, *Nutt. in Torr. & Gray, Fl.* 1. *p.* 411. Steep, rocky banks of Santa Fé Creek; June; in fruit, July. — The fruit appears to be larger than our choke-cherry; and it is fine-flavored, according to Mr. Spalding, who sends it from Oregon.

† 186. C. Virginiana, *DC.* Foot of rocks, on the Mora River; in fruit only; Aug.

187. Spiræa opulifolia, γ. pauciflora, *Torr. & Gray! Fl.* 1. *p.* 414. (S. monogyna, *Torr.! in Ann. Lyc. N. Y.*) Foot of hills, Santa Fé Creek; June, July. Shrub a foot high. — Very probably a distinct species. The ovaries are more commonly two in number.

188. S. dumosa, *Nutt! Mss.; Hook. Lond. Jour. Bot.* 6. *p.* 217. Steep mountain-sides, upper part of Santa Fé Creek; July. Shrub about 4 feet high. — This is the S. discolor of Torrey in *Ann. Lyc. New York* (James's Collection), and a good species; but the original S. discolor, *Pursh*, I believe to be only S. ariæfolia; as certainly is a plant of Menzies so named by Pursh in Herb. Lambert.

189. S. (Petrophytum) cæspitosa, *Nutt.! in Torr. & Gray, Fl. l. c.* Rocky precipices on the Rio Colorado (i. e. the Upper Canadian); August.*

190. Geum macrophyllum, *Willd. Enum.* 1. *p.* 557; *Torr. & Gray, Fl.* 1. *p.* 421. Along the banks of Santa Fé Creek; May to July.

† 191. G. Virginianum, *Linn.* Council Grove, Missouri.

* The æstivation of the petals in Gillenia is not imbricative as in the rest of the family, but *convolute*.

† 192. G. RIVALE, *Linn.* Margins of Santa Fé Creek, in the mountains; June.

193. FALLUGIA PARADOXA, *Torr.! in Emory's Report, t. 2.* (F. Mexicana, *Walp. Repert. 2. p. 46.* Sieversia paradoxa, *Don in Linn. Trans. p. 326. t. 22.* — Rayado Creek, between Bent's Fort and Santa Fé; and on the Rio del Norte, on steep banks; May, in flower; October, in fruit. Shrub 2 to 5 feet high.

194. CERCOCARPUS PARVIFOLIUS, *Nutt. in Torr. & Gray, Fl. 1. p. 427.* — Cliffs of Santa Fé Creek, in the mountains; July, in fruit. Shrub 8 to 10 feet high. The leaves in these fine fruiting specimens are from an inch to an inch and a half in length; the tails of the fruit nearly three inches long and densely plumose.

195. AGRIMONIA EUPATORIA, *Linn.*; var. Banks of Santa Fé Creek; July.

† 196. A. EUPATORIA, *Linn.* Near Fort Leavenworth; August.

197. POTENTILLA FISSA, *Nutt.* β. MAJOR, *Torr. & Gray, l. c.* Perhaps a variety of P. arguta. Rocky places, valley of Santa Fé Creek; June, July.

198. P. DIFFUSA (sp. nov.): humilis; caulibus e caudice perpendiculari crasso adsurgentibus incano-villosis subnudis cito dichotomis et in cymam effusam diliquescentibus; foliis radicalibus pinnatim 5–7-foliolatis, foliolis oblongis approximatis summis confluentibus pectinatim inciso-serratis obtusissimis supra subsericeis viridibus subtus cano-tomentosis mollissimis; caulinis 1–2 foliolis segmentisve 3–5 lanceolatis, cæteris ad bracteas stipulis ovato-lanceolatis fulcratas reductis; pedicellis gracillimis; calycis cano-villosi laciniis ovato-acuminatis bracteolis lanceolatis obtusis sublongioribus petalis aureis obcordatis paulo brevioribus; carpellis lævissimis. — Moist soil, along Santa Fé Creek; June. — This species apparently should stand between P. effusa, *Dougl.* (of which I have present access to no specimen for comparison) and P. Pennsylvanica, ϵ. Hippiana. The flowering stems are 6 to 8 inches high, scape-like, bearing only a single well-formed leaf near the base, and beginning a little above to divide into the effuse, several times dichotomous cyme. Stipules entire, or nearly so. Pedicels 1½ inch long. Flowers rather smaller than in P. Pennsylvanica.

199. P. CRINITA (sp. nov.): humilis, multiceps e radice crassa, albo-villosa; caulibus adscendentibus circ. 3-foliatis apice laxe paniculato-cymosis; stipulis ovato-lanceolatis acuminatis majusculis; foliis pinnatis, radicalibus 11–15-, caulinis 5–7-foliolatis; foliolis oblongis confertis grosse dentatis supra subglabratis subtus rachique pilis longis albis comptis villosis; calycis laciniis ovato-acuminatis bracteolas oblongo-lanceolatas subsuperantibus petalis obcordatis aureis paulo brevioribus; acheniis glaberrimis; receptaculo comoso. — Along Santa Fé Creek, and at the foot of hills, in sunny places; July. — Stems 6 inches high. Radical leaves 2 inches long, including the petiole: leaflets half an inch long; the surface soon smooth or nearly so; the lower clothed with long and

straight, incumbent, white hairs, which give the plant a remarkable appearance. The flower is as large as that of P. Pennsylvanica. The receptacle is very villous.

200. P. ANSERINA, *Linn.* Moist meadows, along Santa Fé Creek; May, June.

†201. P. PENNSYLVANICA, *Linn.*, between *a.* and *β. Torr. & Gray, Fl.* 1. *p.* 438. Hill-sides, Mora River; August, in fruit.

202. P. PENNSYLVANICA, var. CONFERTA. A dwarf, very canescent-silky form, six or eight inches high, agreeing with P. conferta, *Bunge! in Ledeb. Fl. Alt.* Valley of Santa Fé Creek, in the mountains; June, July.

203. P. RIVALIS, *Nutt. in Torr. & Gray, Fl.* 1. *p.* 437. Along the margins of Santa Fé Creek; June, July.—Appears to be exactly Nuttall's plant: allied to P. supina.

†204. P. FASTIGIATA, *Nutt. l. c.* Valley of Santa Fé Creek; June.

205. P. NORVEGICA, *Linn.* Valley of Santa Fé Creek, in the mountains; June, July.

206. FRAGARIA VIRGINIANA, *Ehrh.; Torr. & Gray, Fl.* 1. *p.* 448. Sides of the mountains, Santa Fé Creek, socially, and intermixed with the next; April to June.

207. F. VESCA, *Linn.; Torr. & Gray, l. c.* Similar situations to the preceding, though not generally so high up on the mountains; April to May.

208. RUBUS NUTKANUS, *Moçino; Torr. & Gray, Fl.* 1. *p.* 450: var. PARVIFOLIUS. Shady banks of Santa Fé Creek; June, in flower; July, in fruit. — These are small-leaved specimens, resembling those from Michilimackinac (R. parviflorus, *Nutt.*); the leaves, indeed, only 2 or 3 inches in diameter; the flowers large in proportion. From Lake Superior, where the plant abounds, I have specimens precisely like those of the western coast.

209. R. STRIGOSUS, *Michx. Fl.* 1. *p.* 297. Santa Fé Creek.

210. ROSA BLANDA, *Ait.; Torr. & Gray, Fl.* 1. *p.* 459. Margins of Santa Fé Creek; June.

†211. R. BLANDA, *β. Torr. & Gray, l. c.* Banks of Rock Creek, New Mexico; August, in fruit.

†212. R. WOODSII, *Lindl. Ros. p.* 21, *& Bot. Reg. t.* 976? Rock Creek and Mora River; August, in fruit.

213. AMELANCHIER CANADENSIS, δ. ALNIFOLIA, *Torr. & Gray, Fl.* 1. *p.* 473. Valley of Santa Fé Creek in the mountains; July, in fruit.

LYTHRACEÆ.

214. AMMANNIA LATIFOLIA, *Linn.; Torr. & Gray, Fl.* 1. *p.* 480. Near Council Grove; August to September.

215. LYTHRUM ALATUM, *Pursh, Fl.* 1. *p.* 334. Council Grove, and near Fort Leavenworth; August to September.

ONAGRACEÆ.

216. EPILOBIUM ANGUSTIFOLIUM, *Linn.* Ravines in the valley of Santa Fé Creek, in the mountains; June, July.

217. E. COLORATUM, *Muhl.; Torr. & Gray, Fl.* 1. *p.* 489. Santa Fé Creek, and Raton Creek, in the mountains; June to September.

218. ŒNOTHERA BIENNIS, var. HIRSUTISSIMA. Valley of Santa Fé Creek, in the mountains; June. Plant 2 to 3 feet high.*

†219. Œ. BIENNIS, *Linn.* Near Council Grove.

†220. Œ. BIENNIS, ζ. CANESCENS, *Torr. & Gray, l. c.* Near Independence, Missouri.

221. Œ. SINUATA, γ. HIRSUTA, *Torr. & Gray, Fl.* 1. *p.* 494. Hill-side, near a field, Santa Fé; July.

222. Œ. CORONOPIFOLIA, *Torr. & Gray! Fl.* 1. *p.* 495. Valley of Santa Fé Creek, in various localities, on soil recently thrown up along the side of irrigating ditches, and on old ant-hills; May to July. — A span to nearly a foot high. Also gathered between the Platte and Santa Fé by *Lieut. Abert.* To this I now refer the imperfect fragment in Dr. James's collection which in the *Flora N. Amer.* was cited under Œ. pinnatifida, and from which the character "capsule somewhat tapering towards the apex" was derived. A distinguishing character of Œ. coronopifolia, which perfectly confirms the species, is found in the capsule, which is ovoid-cylindraceous or oblong, turgid, only two thirds or not more than three fourths of an inch long, two lines thick, minutely canescent, and usually sparsely strigose-hirsute. The seeds are oval, striate and punctate, large for the size of the pod, and much larger than in the next species. The petals turn to a deep pink or red in drying.

223. Œ. PINNATIFIDA, *Nutt. Gen.* 1. *p.* 245. Gravelly soil at Santa Fé, and on

* There is a remarkably distinct species of this section in Dr. Gregg's collection, which may be characterized as follows:—

Œ. (ONAGRA) MACROSCELES (sp. nov.): glabra; caule gracili erecto; foliis crassiusculis lævibus dense ciliatis subintegerrimis, radicalibus (7–12-uncialibus) spathulato-lanceolatis in petiolum longe attenuatis, caulinis subsessilibus lanceolato-oblongis; tubo calycis prælongo (5-unciali) gracili ovario lineari 5-plo laciniis plus triplo longioribus; stylo petalas dilatato-cuneiformes æquante stamina superante; stigmatibus prælongis. — Marshy borders of springs, Vara de San José, Ojo de San Bernardo, and Pelayo, Northern Mexico, *Dr. Gregg.* — This species, which should probably stand next to Œ. Jamesii, is remarkable for its smoothness, except the ciliation of the leaves, and for the length of the calyx-tube. The corolla is 3 inches or more in diameter, yellow, turning slightly rose-color in the dried specimens. The anthers are half an inch long, and the stigmas about the same length. The fruit is unknown; the ovary is cylindrical and slender.

the Rio del Norte; May. — Corolla often 2 inches in diameter, pure white turning to rose-color. Some of the specimens are only two or three inches high, and just beginning to blossom; the radical leaves oblong or spatulate and entire: others are a foot high, with widely spreading or decumbent branches; the leaves deeply sinuate-pinnatifid or incised; the lobes mostly triangular or lanceolate, acute. The calyx is merely canescent, or sprinkled with a few hirsute hairs. The capsules are longer and more slender than in any allied species (an inch long, quadrangular, *Nutt.*), frequently an inch and a half or even two inches in length and of the same diameter (one line) throughout, truncate, prismatic, porrected, or at length decurved or contorted. Seeds oblong, smooth, small.

224. Œ. PINNATIFIDA, var. INTEGRIFOLIA. Santa Fé, and along the Cimarron, in gravelly soil or sand; June to August. — The leaves are oblong or lanceolate, often conspicuously mucronate, repand-denticulate, or with here and there a distinct salient tooth, both sides more or less canescent with a minute appressed pubescence. The flowers, and the elongated, slender, prismatic capsules, are just as in no. 223; of which it is no doubt a variety, and to which it sustains the same relation that Œ. humifusa, *Nutt.*, and Œ. minima, *Pursh*, do to Œ. sinuata (*Torr. & Gray, Fl.* 1. *p.* 494). Precisely the same form was gathered on the Platte in Fremont's first expedition; and on one specimen I notice that the petals, instead of turning uniformly reddish or in blotches with age or in drying, are minutely punctate with red dots. While some forms gathered in Fremont's third expedition pass by their foliage directly into the ordinary Œ. pinnatifida (although, indeed, they sometimes exhibit running or horizontal roots), others, with narrower leaves, appear to run into Œ. albicaulis, *Nutt.;* and still others, becoming nearly or quite glabrous and smooth, make a perfect transition into Œ. pallida, *Lindl.*, the narrow-leaved forms of which I cannot distinguish from Œ. albicaulis.

†225. Œ. SPECIOSA, *Nutt.* Near Council Grove, &c.; August.

†226. Œ. FRUTICOSA, *Linn.;* var. Council Grove; August.

227. Œ. CANESCENS, *Torr. & Frem.! in Frem. 2d Exped. p.* 315. (Œ. guttulata, *Geyer in Hook. Lond. Jour. Bot.* 6. *p.* 222?) Sand Creek (of the Cimarron) at the margin of a low, swampy place; Sept. — Plant a span high, with the foliage and somewhat the aspect of a Gaura; the leaves minutely strigose-canescent, half an inch long, oblong-lanceolate or linear, entire or obscurely toothed. The wiry stems are very leafy to the top. Calyx-tube slender, three fourths of an inch long, purplish, thrice the length of the ovoid canescent ovary, less than twice the length of the calyx-tube. Petals broadly obovate, entire, two thirds of an inch long, white, with some of each flower conspicuously spotted or blotched with rose-purple. Anthers linear. Divisions of the stigma linear, slender. Capsule sessile, canescent, one fourth of an inch long, and almost as

broad, turgid-ovate, apiculate, with four strongly carinate or almost winged angles, the intermediate ribs scarcely prominent. Seeds numerous in each cell, obovate, with a smooth and thin testa. — This plant accords with the description of Œ. guttulata, *Geyer*, except that the petals are not obcordate. It agrees with the original specimen of the earlier published Œ. canescens; the capsules of which were by an oversight described as *obovate* instead of ovate.

228. Œ. (Pachylophis) eximia (sp. nov.): subcaulescens; foliis elongato-lanceolatis maximis sinuato-pinnatifidis in petiolum attenuatis ad margines costamque dense villosis flores superantibus; ovario sessili fusiformi pluricostato secus costas muricatulo in tubum calycis longissimum patenti-pilosum (laciniis lanceolatis ad carinam villosis 5–6-plo longiorem) sensim attenuatis. — Along Santa Fé Creek; June, July. — This is far the largest and most striking species of the section, and apparently one of the handsomest of the genus. My specimen shows a thick and fleshy ascending stem, torn from the root or caudex, a span in length, which bears numerous alternate but approximated leaves, many of them a foot long. These are pinnatifid-sinuate, as in Œ. marginata, *Nutt.*, and with the margins and midrib equally villous. Besides the far greater size, which may be of no consequence, the ovaries and young capsules are strictly sessile in the axils of the leaves, and the older ones are glabrous except towards the apex, where they taper insensibly into the prolonged calyx-tube, showing no exterior indication of the point of separation. They are an inch and a half in length by two lines in diameter, purplish, many-striate, and minutely muricate or tuberculate along the ribs, the older ones incurved. The calyx-tube attains the length of 6 or 7 inches; the segments are fully an inch and a half long, marked with a slightly carinate midnerve, which is villous. The petals are fully the length of the calyx-segments, white, changing to rose-color. Anthers fixed by the middle, almost an inch long. The ripe fruit is unknown.*

229. Œ. (Meriolix, *Raf.*, Calylophis, *Spach.*) serrulata, principally β. Douglasii, *Torr. & Gray, Fl.* 1. *p.* 502. Sandy hill-sides and low prairies, from Las Vegas to the Cimarron; August.

230. Œ. (Salpingia) Fendleri (sp. nov.): minutissime pulverulento-glandulifera, glabra; caulibus e radice lignosa decumbentibus; ramis brevibus adsurgentibus; foliis

* Fine specimens of Œ. montana, *Nutt.*, gathered by Fremont in his second journey, which I have examined in Dr. Torrey's herbarium, perfectly accord with those of Nuttall, and remain distinct from Œ. cæspitosa; but the cylindraceous pods have the sutures slightly crested. The seeds resemble those of Œ. marginata. The tube of the glabrous calyx is only two or three inches long, and twice or thrice the length of the segments. — No. 406 of Geyer's Oregon collection, named Œ. triloba in the published account, is Œ. heterantha, *Nutt.*; which also occurs in Spalding's Oregon collection.

lanceolatis oblongisve sessilibus subintegerrimis; calycis tubo apice infundibulari-inflato ovario prismatico sessili laciniisque triangulari-lanceolatis cuspidatis 3–4-plo longiore; petalis rhombei-obovatis stylo paulo longioribus. — Sunny hill-sides, at Santa Fé, and on the Rio del Norte; also (chiefly a narrower-leaved form) from Rock Creek eastward to the Cimarron River; May to August. — A well-marked species, with numerous stems 4 to 10 inches long, the larger ones procumbent; the whole plant green, but sprinkled with minute glandular or resinous dots. Leaves 1 to 2 inches long, 2 to 6 lines wide, rather obtuse, somewhat scattered. Flower, including the sessile ovary, three inches long, the calyx-tube fully half an inch wide at the throat. Petals about an inch long, "sulphur-color, turning to red in a few days after opening, and in drying." Anthers half an inch long. Stigma dilated, disciform, obscurely 4-lobed. Capsule (immature) an inch long, linear, between prismatic and cylindrical, slightly incurved, of the same diameter throughout, somewhat 4-grooved, glabrous. The flower-buds are spotted with purple, as is often the case with Œ. Missouriensis, to which our plant bears some likeness. — The section *Salpingia* is further confirmed by the discovery of still another species, a dwarf frutescent plant, of which specimens were gathered in Northern Mexico by Dr. Gregg.* In his collection I also find Œ. (Salpingia) lavandulæfolia, *Torr. & Gray*, from the neighbourhood of Buena Vista; from Encantada, also the Œ. Hartwegi (likewise gathered around Monterey by Dr. Edwards and Major Eaton); and from Patos a variety of the same, approaching Œ. lavandulæfolia, with somewhat hoary and toothed leaves. The seeds are oblong and inappendiculate.

231. Gaura epilobioides, *H. B. K. Nov. Gen. & Sp.* 6. *p.* 93? Near fields, Santa Fé; May to Sept. — There are several forms of the plant in the collection, which accord pretty well with the description of G. epilobioides, and, as to the flowers and upper leaves, may well be compared with Epilobium rosmarinifolium. It is the same plant with no. 164 of Coulter's Mexican collection, except that the upper leaves of ours are smoother.

† 232. G. villosa, *Torr. in Ann. Lyc. N. Y.* 2. *p.* 200. Along the Cimarron River; August, in fruit. — The fruit is oblong, tapering upwards, about 4 lines long, glabrous,

* Œ. (Salpingia) Greggii (sp. nov.): fruticulosa, ramosissima, erecta, undique minutissime viscido-puberula; foliis parvis (3–6 lin. longis) spathulatis vel oblanceolatis integerrimis sessilibus seu in petiolum pl. m. attenuatis; floribus parvulis; tubo calycis apice breviter obconico filiformi ovario sextuplo laciniisque triangulari-lanceolatis cuspidatis petala rhomboidea subæquantibus quintuplo longiore; capsula sessili oblongo-prismatica. — Hill southeast of Pelayo, in Chihuahua, *Dr. Gregg;* May, 1847. "A very small semi-shrub; flower yellow." The specimens are about 8 inches high, very bushy: the petals turn to rose-color in drying, as in the allied species, and are one third of an inch in length. Capsules scarcely half an inch long.

strongly tetraquetrous, when immature fusiform, but at maturity abruptly contracted into a slender stipe about two lines in length.

†233. G. BIENNIS, *Linn.* Bottom land, Kansas River; August.

†234. G. PARVIFLORA, *Dougl. in Hook. Fl. Bor.-Am.* 1. *p.* 208. Council Grove to Mora River, in low prairies and bottoms.

†235. STENOSIPHON VIRGATUS, *Spach, Mon. Onagr. p.* 64. Prairies, Kansas River; September. Plant 4 to 5 feet high.

†236. LUDWIGIA PALUSTRIS, *Ell. Sk.* 1. *p.* 214. Bluff Creek, near Council Grove; September.

†237. L. ALTERNIFOLIA, *Linn.* Kansas River; August.

238. HIPPURIS VULGARIS, *Linn.* Ponds, Santa Fé; May, June; in flower.

LOASACEÆ.

†239. MENTZELIA OLIGOSPERMA, *Nutt. in Bot. Mag. t.* 1760. (M. aurea, *Nutt. Gen.*) Council Grove, on hills between rocks; August.

240. M. (BARTONIA) ORNATA, *Torr. & Gray, Fl.* 1. *p.* 534. — Between the Rio Colorado (Upper Canadian) and Rock Creek; Aug. Petals, as in the fine specimens gathered by Fremont, &c., 2½ inches long; the stamens nearly 2 inches long and all filiform. — I have never seen this species alive, nor does Mr. Fendler record the color of the flowers; but Mr. Sprague, who observed it on the Missouri, confirms the uniform statement that the flowers are white, at most yellowish-white, and expand at sunset. I have raised the nearly allied M. nuda from seed, the flowers of which are said by Nuttall to be "of the same color" as those of M. ornata; and I observed the *white* corolla uniformly to open an hour or half an hour before sunset, and to remain expanded through the evening. On the other hand, the M. lævicaulis of the interior of Oregon has yellow blossoms, which never expand in the evening, but during bright sunshine, according to Douglas: they are "pale yellow," according to Mr. Breckenridge: "they open during sunny hours, and are of a lurid golden-yellow," according to Mr. Geyer. There is also an evident difference in the foliage, and in the foliose bracts, which are sparing in M. lævicaulis; the latter has but five petals and five dilated filaments; and although, indeed, Dr. Torrey assures me that these are sometimes replaced by five additional petals, still I cannot think that M. lævicaulis should be merged in M. ornata, as has recently been done on the high authority of Sir Wm. Hooker.

241. M. (BARTONIA) NUDA, *Torr. & Gray, l. c.* McNees Creek, and Pawnee Fork of the Arkansas; Aug. to Sept. — This species extends to Texas, on the Cibolo and Pierdenales, whence it has been sent by Lindheimer, along with seeds from which I have

raised the plant. The petals are white, and expand just before sunset, as mentioned above; they vary from an inch and a half to three fourths of an inch in length. In all the specimens I have seen, from various localities, the ovary is more or less foliolose-bracteate at the base, and sometimes as conspicuously so as in M. ornata itself.

242. M. MULTIFLORA, *Nutt. Pl. Gamb. in Jour. Acad. Philad. n. ser.* 1. *p.* 180? under Bartonia. Santa Fé; June, July. Flower seldom open in the day-time. Also along the Arkansas near Bent's Fort; Sept. (I have not seen the latter specimens.) — The specimens are a foot or more in height, with most of the leaves rather deeply pinnatifid, and flowers about one fourth larger than those of an original specimen of Nuttall's Bartonia pumila in Dr. Torrey's herbarium, with which, except in the greater size, they accord tolerably well. The stems become bright white with age, as in other species. The petals apparently straw-color, perhaps white, are one half or one third of an inch in length, obovate or spatulate and rather obtuse, except with age, exceeding the subulate calyx-segments, and longer than the ovary. The outer filaments are conspicuously dilated. I have the same species, apparently, from Coulter's Californian collection, but with rather larger flowers, and more interruptedly pinnatifid leaves. In Dr. Torrey's herbarium I notice specimens, for the most part imperfect, referable either to this plant or to M. pumila itself, gathered on the Upper Platte or Arkansas by Dr. James in Long's expedition, and in the valley of the Rio del Norte, New Mexico, by Lieut. Emory. I can hardly doubt that it is the Bartonia multiflora of Nuttall, although the petals are not quite so large as he describes them. There is a related species in Texas, which I have also flowered in cultivation.*

†243. M. NUDA, var.? with more undivided leaves and smaller blossoms. Low prairie, near the Mora River; August.

* MENTZELIA (BARTONIA) WRIGHTII (sp. nov.): annua, hirsuluto-scabra; caule (bipedali) simplici vel paniculato; foliis oblongo-lanceolatis grosse sinuato-dentatis, infimis in petiolum attenuatis, superioribus basi truncata vel subauriculato-dilatata arcte sessilibus; bracteolis 1–2 linearibus integris ovarium adæquantibus; floribus parvulis ochroleucis; petalis 10 lanceolato-spathulatis lacinias calycis vix superantibus ovario cylindrico brevioribus; filamentis omnibus lineari-subulatis exterioribus paulo dilatatis; placentis 3 polyspermis; seminibus alatis. — On sand-bars in the Colorado, opposite Bastrop, Texas, *Mr. Wright.* — The wild specimens are scarcely two feet high, with a nearly simple upright stem; the leaves only 2 or 3 inches long. Those raised from seed in the Cambridge Botanic Garden attained a greater height, branched copiously, and continued to flower through the summer and until arrested by frost. It bore cauline leaves of from 4 to 6 inches in length and an inch or more in breadth; the upper ones closely sessile by a more or less dilated and truncate base. The leaves are regularly pinnatifid-sinuate into 8 or 10 pairs of coarse and obtuse teeth, rather than lobes, on each side. The flowers open at sunset, or sometimes in a cloudy day; the narrow petals barely one third of an inch in length. Capsule subclavate-cylindrical, an inch long, very rough.

CACTACEÆ. (By *Dr. Engelmann.*)

244. MAMMILLARIA VIVIPARA, *Nutt.* sub Cacto. Common from Bent's Fort to Santa Fé, on rocky hills and elevated plains; flowering in July. — "Heads mostly single, often in pairs, rarely cæspitose from the ramifications of the subterraneous stem"; not proliferous, as some specimens from the Upper Missouri are. — There can be little doubt that this is the true Cactus viviparus of Nuttall, although the flowers do not appear to be entirely central. I have living specimens from Santa Fé, and from the Upper Missouri, and shall be able to decide their identity after having seen them flowering. — I possess, also, a living specimen of Nuttall's Cactus mammillaris (*Gen. p.* 295), and have observed its flower and fruit. It is, as has been long suspected, entirely different from the West Indian Mammillaria simplex, *DC.*, and is nearly related to M. similis, *Engelm. in Pl. Lindh.* I have named it after its discoverer.*

245. M. PAPYRACANTHA (sp. nov.): ovata, prolifera, aculeis omnibus planis chartaceis flexilibus albis, radialibus brevibus 8 centralibus 3 – 4 multo longioribus, 2 – 3 superioribus sursum curvatis, singulo inferiore longiore latiore deorsum flexo; floribus centralibus (albidis); sepalis 12 – 16 ovatis acutis integris; petalis sub-13 lanceolatis acuminatis integris; stigmatibus 5 suberectis exsertis albidis. — In a valley between the lower hills, near Santa Fé, in loose, red sandy, though fertile soil: found only once; flowering in May. — About 2 inches high, and 1½ inch in diameter; the tubercles in about 8 spiral rows; lower ones proliferous; their shape not well distinguishable in the half-rotten specimen before me. Spines silky-white, shining, of the consistency of stiff paper. None of the 8 radiating spines (1½ or 2 lines long) are directed upwards, but all laterally or

* M. NUTTALLII (sp. nov.): simplex (an semper?), globosa, axillis tuberculorum ovato-cylindricorum supra leviter sulcatorum subtomentosis; areolis junioribus albo-tomentosis; aculeis rectis albidis, radialibus 13 – 16 subinæqualibus setaceis, centrali porrecto robustiore; floribus ex axillis tuberculorum hornotinorum centralibus (ex rubello flavicantibus); sepalis petalisque oblongo-lanceolatis; sepalis 10 – 13, brevioribus exterioribus ciliato-fimbriatis obtusiusculis, interioribus apice laceris acutis; petalis 20 – 23 integris breviter abrupte mucronatis; stylo supra stamina (rubella) paulo exserto, stigmatibus circa 5 brevissimis erectis adpressis viridibus; baccis lateralibus subglobosis coccineis. Cactus mammillaris, *Nutt.*, non *Linn.* — On high, dry prairies, about Fort Pierre, on the Upper Missouri; flowering in May. — My specimen is an inch and a half high, and of the same diameter; the tubercles 6 or 7 lines long, in 8 spiral rows, slightly sulcate. Radial spines 4 or 5, the central one 5 to 6 lines long; the young spines at the apex slightly brownish. Flowers an inch long, and, when fully expanded, of the same diameter. Petals about 2 lines wide, acute, abruptly mucronate. Stigmas only from one half to three fourths of a line long, erect. The fruit ripens the following spring, and, as well as the seed, is very similar to that of M. similis, but only half as large, although the pits of the globose black seed are of the same size.

downwards; the 2 or 3 central curved spines are directed upwards, and 6 to 8 or 9 lines long, the middle one shorter or wanting. The lower central spine is the longest (10 to 14 lines) and broadest, being from 1 to 1¼ line wide. Flowers pearly white, 12 to 13 lines long, 12 to 15 lines in diameter. Lower sepals membranaceous; the upper herbaceous in the middle. Petals about two lines wide.

246. Cereus viridiflorus, *Engelm. in Wisliz. Rep. not.* 8, sub Echinocereo. Eastern mountains of Santa Fé, on sunny, rocky declivities; flowering in May and June. — I have seen specimens brought from other parts of New Mexico, of much larger size than than those of Fendler or Wislizenus, some of them 1½ inch in diameter and 3 to 4 inches high, some with stout central spines, others entirely destitute of them.*

* After a careful revision of the characters which distinguish my genus *Echinocereus* (*Wisl. Rep. note* 7) from *Cereus* proper, I think it most natural to unite the two. Echinocereus will then constitute the first section of Cereus, and comprise those of low stature and mostly of cæspitose growth, having diurnal flowers with short tubes (and almost straight embryos with very small cotyledons). It appears to comprise Prince Salm Dyck's (*ined.*) first two sections, viz.: 1. *Lophogoni*, and 2. *Sulcati*; but perhaps not all of the latter. Those known to me as belonging to New Mexico, Chihuahua, and Texas, may be divided into two sections, viz.: —

§ 1. Costati: caule 4 – 10-costato; aculeis radialibus pl. m. porrectis non pectinatis; areolis orbiculatis.

A. *Tuberculis subdistinctis.*

1. C. procumbens (sp. nov. ined.): tuberculis 4 – 5-serialibus; aculeis brevibus tenuibus, 5 – 6 radialibus, 1 centrali. — Matamoras.

B. *Tuberculis in costas confluentibus.*

* *Aculeis plus minusve teretibus.*

2. C. coccineus, *Engelm. in Wisl. Rep. not.* 9. Costis 9 – 11; aculeis radialibus 9 – 10, centrali 1 recto.

3. C. polyacanthus, *Engelm. l. c. not.* 28. Costis 10; aculeis radialibus 10 – 12, centr. 4 rectis.

4. C. Rœmeri (sp. nov. ined.): Costis 7 – 9; aculeis radialibus 8, centrali 1 recto. — Western Texas.

5. C. Fendleri (sp. nov. supra): Costis 9 – 10, aculeis radialibus 7, centrali 1 curvato.

* * *Aculeis compressis, angulatis.*

6. C. enneacanthus, *Engelm. l. c. not.* 46. Costis 10; aculeis radialibus 8, centrali 1 recto.

7. C. triglochidiatus, *Engelm. l. c. not.* 9. Costis 6 – 7; aculeis 3 – 6 subcurvatis.

§ 2. Sulcati: caule sinubus 10 – 24 parum incisis sulcato; areolis pl. m. elongatis; acul. rad. pectinato-connatis.

8. C. dasyacanthus, *Engelm. l. c. not.* 19. Septdec. – octodecim-sulcatus; aculeis radialibus subporrectis, centralibus radiales subæquantibus, pluribus deflexis.

9. C. rufispinus, *Engelm. l. c. not.* 31. Undecim-sulcatus; aculeis rad. adpressis variegatis elongatis, centrali 1 robusto.

10. C. adustus, *Engelm. l. c. not.* 29. Tredecim – 15-sulcatus; aculeis rad. pectinatis albidis adustis, centrali nullo seu 1 robusto. The last form is β. radians (Echinocereus radians, *Engelm. l. c. not.* 30).

11. C. viridiflorus, *Engelm. l. c. not.* 8. Tredecim-sulcatus; aculeis rad. pectinatis variegatis, centrali nullo seu 1 robusto.

12. C. pectinatus, *Scheidw.* sub Echinocacto; *Engelm. l. c. not.* 45, sub Echinocereo: Octodecim – 23-sulcatus; aculeis radialibus pectinatis, centralibus 2 – 5 brevissimis.

13. C. cæspitosus, *Engelm. in Pl. Lindh.* Tredecim – 18-sulcatus; aculeis rad. pectinatis, centrali nullo.

247. C. COCCINEUS, *Engelm. l. c.*, sub Echinocereo. Higher mountains about Santa Fé; often in large clusters of 8 or 15 heads; flowering in May. — The areolæ are hardly oval, but almost orbicular, and are distinguished from those of most related species by their large size. — Among a number of plants of this family which Mr. Fendler sent from Santa Fé in a living state, but which unfortunately were all dead when they came to hand, are some specimens which appear to be varieties of this species, viz.: — *β.* MELANACANTHUS: aculeis radialibus 10–12 cinereis, centrali longissimo atrofusco porrecto recto seu leviter deorsum curvato. — *γ.* CYLINDRICUS: subsimplex, cylindricus; aculeis 8 radialibus, singulo robustiori porrecto.

248. C. TRIGLOCHIDIATUS, *Engelm. l. c.*, sub Echinocereo. Higher mountains about Santa Fé; also in gravelly soil on the lower hills; flowering in May and June. — To the description given in Wislizenus's Report I will add here, that the spines are often somewhat curved; the ridges are sharp, but the grooves between them very wide and shallow; the areolæ widely distant from one another (often over an inch and a quarter), and the expression "*areolis sparsis*," in the character, ought to be changed to *areolis distantibus*.

249. C. FENDLERI (sp. nov.): globoso-ovatus, simplex vel e basi proliferus, cæspitosus; costis 9–10 obliquis tuberculatis interruptis; areolis orbiculatis approximatis; aculeis basi bulbosis robustis, radialibus sub-7 compressis subincurvis fuscis demum cinereis (tribus inferioribus longioribus, superioribus brevioribus, summo nullo); aculeo centrali robustiore longiore teretiusculo sursum curvato atro-fusco; floribus campanulatis; tubo pulvillis sub-30 albo-tomentosis stipato, inferioribus aculeos setaceos albos apice adustos 8–12 radiales et singulum centralem, superioribus aculeos sub-3 robustiores longiores curvatos albos gerentibus; sepalis interioribus 12–15 lineari-lanceolatis acutis; petalis oblongo-linearibus, acutis vel obtusis 16–24; stigmatibus 12–14 viridibus stamina numerosissima vix superantibus. — *β.* PAUPERCULUS: aculeis robustis abbreviatis, radialibus 5–7, centrali subnullo. — Santa Fé, on elevated sandy plains; flowering in June. — The specimens before me are 2½ inches high, and at the base of the same diameter: the areolæ from 4 to 6 lines distant; the lower radial spines 7 to 10, the upper from 3 or 4 to 6 lines long; central spine somewhat erect, curved upwards, 10 to 15 lines long. In var. *β.* the spines are all from 3 to 6 lines long. The upper spine is wanting in all my specimens, and the opposite lowest one is longer than any except the central spine. Flowers from 2½ to 3¼ inches long and wide, violet-purple. The spines on the lower part of the tube are from 2½ to 3, and on the upper from 3 to 5 lines long. Petals variable in shape.

250. OPUNTIA PHÆACANTHA (sp. nov.): diffusa; articulis obovatis seu orbiculato-

obovatis compressis; areolis orbiculatis fusco-setosis margine inferiore aculeos robustos 1–5 rectos compressos inæquales fuscos apice pallidiores plerumque deflexos gerentibus rariusve nudis; ovario obconico areolis sub-30 tomento pallide fusco instructis, superioribus albo-setosis; sepalis interioribus sub-20 late obovatis retusis seu emarginatis; petalis 10–13 obovatis retusis seu emarginatis; stigmatibus 5–7 suberectis stamina vix superantibus; bacca obovato-pyriformi nuda. — On rocky hills about Santa Fé, and on the Rio Grande, very common; flowering in May and June. This appears to be the most northern form of the Opuntiæ with yellow or brown and flattened spines, which belong to the section of *O. Tuna*. Another species, with larger joints and larger fruit, occurs in Texas. — Some specimens before me are prostrate, with ascending branches; the joints 5 or 5½ inches long, and 3½ or 4 wide; areolæ an inch distant from each other, most of them bearing stout spines; the lower sometimes only one, the upper from two to five, but mostly three or four: one or two are directed upwards, the other and stouter ones more or less downward. Larger spines 1½ to 2 inches long, dark brown with lighter tips; the smaller from half an inch to one inch long, whitish. — Another specimen has larger, more orbiculate joints, from six to eight inches long, and five or six wide; the spines fewer, all directed downwards, or on many areolæ none at all. The flowers which have been distributed under this number are two or two and a half inches in diameter: ovary about one inch long: sepals yellow with red: petals yellow: stamens red or yellow: stigmas apparently green. The fruit which Mr. Fendler says belongs to this species is about half an inch long, red, smooth, apparently juicy when fresh; the seeds often three lines in diameter, margined like those of O. vulgaris. — Several other Opuntiæ with compressed joints, some of them with fleshy, others with dry and spiny fruit, some of them very spiny, and others almost destitute of spines, have been collected by Mr. Fendler about Santa Fé; but for want of more complete materials, a description is not here attempted.

251. O. CLAVATA, *Engelm. in Wisliz. Rep. not.* 12. Plains around Santa Fé; never found on the mountains; flowering in June. — I add to the description already published, that the areolæ are very large and closely approximate. From nine to eleven smaller and narrower spines are directed upwards or radiating; about six of them are turned downward, and are larger and longer; the former are from two to four, or even six or eight, lines long; the latter are from six to fourteen lines long. The joints form a large and spreading, level-topped mass, which attains the diameter of several feet.

252. O. ARBORESCENS, *Engelm. l. c. not.* 5. Hills and elevated plains, from Bent's Fort on the Arkansas to Santa Fe; flowering in June. — About five feet high, sometimes

as much as five inches in diameter below; the older stems and branches terete; the younger joints strongly tuberculated. Spines often an inch long, generally from 15 to 25 in each fascicle.

GROSSULARIACEÆ.

253. RIBES IRRIGUUM, *Dougl. in Hort. Trans.* 7. *p.* 516. Margin of Santa Fé Creek; May. — The specimens are in flower only. The pedicels are short, as in R. hirtellum, *Michx.* (*Torr. & Gray, Fl.* 1. *p.* 546), which the plant much resembles; but the leaves are rounder and more downy, the campanulate calyx is yellowish-green, with no purple tinge, and the spines are triple. The stamens are somewhat longer than the petals, but shorter than the oblong calyx-lobes. These are not mentioned in the published character of R. irriguum, *Dougl.* But I am confident that this is the species in question, as I have the same from the valley of the Kooskooskee, where it appears to abound. According to Mr. Spalding, who sends it, it grows by the water-side, and yields "a most delicious gooseberry or currant, tasting like a plum." The same is in Geyer's collection, (No. 330), in flower, under the name of R. triflorum. The fruit scarcely exceeds a large currant in size, and is perfectly smooth. — From Mr. Spalding I also have characteristic specimens of R. divaricatum, *Dougl.*, which, he remarks, is often twelve feet high, and which is likewise said by Geyer to form "a robust shrub or small tree, 8 to 15 feet high, very thorny; stems 2 to 4 inches in diameter."

254. R. LEPTANTHUM (sp. nov.): glabrum, esetosum; spinis subaxillaribus solitariis validis rarius geminis ternisve; foliis parvis (4–6 lin. latis) crebris 5-fidis, lobis incisis; pedunculis brevibus deflexis 1–2-floris; pedicellis subnullis; bracteis rotundatis ovario brevioribus; calyce tubuloso gracili extus piloso albido, lobis subspathulatis tubum æquantibus staminibus petalisque integerrimis subduplo longioribus; stylo glabro indiviso; stigmatibus binis; baccis inermibus glabris. — Rocky banks of the Rio del Norte, and ravines near Santa Fé; May. — Shrub 3 to 4 feet high. Flower nearly half an inch in length. — Very distinct from any species in the *Flora of North America*; apparently resembling the R. microphyllum, *H. B. K.*, of Mexico, which, however, is said to have very short peduncles, red flowers, a campanulate calyx, retuse petals, and a 2-cleft style.

255. R. CEREUM, *Dougl. l. c.; Torr. & Gray! Fl.* 1. *p.* 551. (R. pumilum & R. reniforme, *Nutt.! Mss.*) Shaded banks of Santa Fé Creek; May, in flower. Shrub 3 to 4 feet high.

† 256. R. sp.; leaves only, of a glutinous species, perhaps merely a form of R. cereum. Rocky hill-sides, near Santa Fé, and on the Mora River.

257. R. AUREUM, *Pursh, Fl.* 1. *p.* 164. River banks and bottoms, from Mora River to Rock Creek; August. In fruit only.

CUCURBITACEÆ.

†258. ECHINOCYSTIS LOBATA, *Torr. & Gray, Fl.* 1. *p.* 542. Hickory Point, about eighty miles west of Independence.

259. DISCANTHERA DISSECTA, *Torr. & Gray, Fl.* 1. *p.* 697; var. foliis pedato-partitis (haud sectis). Rock Creek bottom, New Mexico; August.

260. CUCUMIS? PERENNIS, *James in Long's Exped.* 2. *p.* 345; *Torr. & Gray, Fl.* 1. *p.* 543. Low places, Santa Fé; June. — I have this in cultivation, from Texan seeds, and hope to notice it more particularly in the forthcoming enumeration of Lindheimer's collection, part 2.

†261. CUCURBITA PEPO, *Linn.* Fields, around Santa Fé.

CRASSULACEÆ.

†262. SEDUM RHODIOLA, *DC.?* Rocks, in the mountains near Santa Fé Creek. Scarcely in flower. The plant is only 3 or 4 inches high, and the leaves are entire, as in the specimens mentioned by Torrey, in *Ann. Lyc. New York*, 2. *p.* 206.

†263. PENTHORUM SEDOIDES, *Linn.* Near Council Grove.

SAXIFRAGACEÆ.

264. HEUCHERA PARVIFOLIA, *Nutt. in Torr. & Gray, Fl.* 1. *p.* 581. Rocks, on the northern face of mountains, Santa Fé; June, July; in flower.*

265. SAXIFRAGA BRONCHIALIS, *Linn.; Torr. & Gray, Fl.* 1. *p.* 564. Steep and shaded rocky banks, Santa Fé Creek; May, June.

266. PHILADELPHUS MICROPHYLLUS (sp. nov.): ramis gracilibus erectis; foliis parvis (6 – 9 lin. longis) ovato-lanceolatis oblongisve integerrimis obtusiusculis obsolete triplinerviis supra nitidis subtus pallidis minute pilosis basi in petiolum brevissimum angustatis; floribus terminalibus solitariis ternisve; calyce quadrifido extus glabro, laciniis ovato-lanceolatis intus tomentulosis; stylis ad apicem usque connatis staminibus brevioribus; stigmatibus 4 oblongis; capsulis subglobosis. — Santa Fé Creek, on sunny and

* Heuchera hispida, *Pursh*, the rediscovery of which in the mountains of Virginia (in Giles county) I have recorded in *Silliman's Journal, second series*, 1. *p.* 81, and which I have retained in cultivation in the Cambridge Botanic Garden, is also found in Hancock county, Illinois, by Dr. Mead, who has distributed it under the name of H. Richardsonii, *R. Br.*; from which, indeed, except that it is a larger and more hairy plant, it does not appear to differ.

steep sides of the mountains, between rocks, eleven miles above Santa Fé; June, July. — A very handsome species, well distinguished by its remarkably small leaves. The specimens bear a profusion of flowers, which are for the most part solitary at the apex of the branchlets, and are large in proportion to the foliage, the petals being nearly equal in size to the leaves themselves. Their margins are somewhat erose.

267. JAMESIA AMERICANA, *Torr. & Gray! Fl.* 1. *p.* 593. Banks of Santa Fé Creek, near the water, where the stream is walled in on both sides by high rocks; June. — The genus was founded upon an extremely imperfect specimen, gathered by Dr. James in Long's expedition to the Rocky Mountains. The fine specimens brought by Fendler now afford the opportunity of completing, and correcting in some points, the generic character; which is accordingly appended.*

UMBELLIFERÆ.

†268. SANICULA MARILANDICA, *Linn.* Near Council Grove; September.

†269. CICUTA MACULATA, *Linn.* With the last.

270. C. MACULATA, *Linn.*, var. foliolis angustioribus. Banks of Mora River; Aug.

†271. BERULA ANGUSTIFOLIA, *Koch, Fl. Germ. p.* 287. (Sium angustifolium, *Linn.*)

*** JAMESIA, *Torr. & Gray, Fl. N. Am.* 1. *p.* 593.**

Flores hermaphroditi. Calyx persistens, quinquefidus, tubo brevissimo turbinato imo ovario adnato; laciniis triangulari-ovatis mucronatis, sæpiusve apice retusis aut bifidis et bimucronatis, æstivatione valvatis? Petala 5, perigyna, obovata, concava, sessilia, æstivatione convoluto-imbricata, decidua. Stamina 10, cum petalis inserta, decidua, 5 petalis antepositis eadem subæquantibus, 5 alternis brevioribus: filamenta complanato-subulata: antheræ didymæ, basifixæ, introrsæ; loculis ovalibus longitudinaliter dehiscentibus. Ovarium conoideum, ima basi calycis adnatum, uniloculare; placentis 3 (rarius 4 – 5) dilatatis, ad suturas introflexas parietalibus, multiovulatis: styli totidem, stamina æquantes, basi tantum connati, apice subclavati stigmate obtuso subextrorsum desinentes. Ovula horizontalia, multiseriata, anatropa. Capsula conoidea calyce inclusa, semi-trilocularis, apice inter stylos persistentes divergentes dehiscens. Semina numerosissima, horizontalia, ovalia; testa nitida, nucleo conformi, striato-reticulata. Embryo in axi albuminis carnosi rectus, ejusdem fere longitudine; cotyledonibus brevibus; radicula cylindrica hilo proxima. — Frutex ramosus, cortice fusco; foliis oppositis, exstipulatis, petiolatis, ovatis vel oblongis, penninerviis, grosse serratis, membranaceis, deciduis, supra pubescentibus viridibus, subtus cum ramulis calycibusque canescenti-pilosis; floribus cymosis, majusculis, albis; petalis intus puberulis.

The foliage and flowers are somewhat like those of Pyrus Aria in aspect. — To the vicinity of this genus I should have referred the curious Pterostemon Mexicanus, *Schauer, in Linnæa*, 20. *p.* 736, which is also in Coulter's Mexican collection, no. 85, from Zimapan (but without fruit), except that Schauer describes the seeds as destitute of albumen, and notices minute stipules. He refers the genus to Pomaceæ, and considers it as an intermediate link with Myrtaceæ. I notice that the petals are convolute in æstivation: but so they are, likewise, in Gillenia.

Santa Fé Creek; August. Although destitute of fruit, the specimen well agrees with the European plant. Perhaps it is also the Sium pusillum of Nuttall. I have the same plant, in flower only, from Michigan.

272. Archemora Fendleri (sp. nov.): radice fasciculato-tuberosa; caule simplici; foliis pinnatis 5–7-foliolatis; petiolis basi spathaceis; foliolis oblongo-ovatis obtusis vel fol. supremorum lanceolatis inciso-serratis utrinque viridibus; involucellis nullis; fructibus parvulis angusto-alatis. — Margins of Santa Fé Creek, in fertile soil; June, July. — This is clearly a congener of Archemora rigida, although it wants the involucels. The root consists of three or four oblong, fasciculated, and pendulous tubers about an inch long. Stem slender, one to two feet high. Cauline leaves two or three. Leaflets three fourths of an inch to an inch and a half long; those of the radical and lower cauline leaves ovate or oblong, obtuse; all incisely serrate throughout; not barely 2–3-toothed, as in A. rigida. Umbel small. Fruit hardly two lines in length, oval; the wing-like margins narrower than the disk. Vittæ of the commissure four, of which two are shorter, as is often the case in A. rigida.

273. Heracleum lanatum, *Michx.* With the preceding; June, July, in flower.

274. Cymopterus Fendleri (sp. nov.): pumilus, subcaulescens; foliis viridibus 2–3-pinnato-partitis ambitu oblongis vel ovato-lanceolatis pedunculos excedentibus, pinnis segmentisque 5–7 oblongis obtusis incisis superioribus confluentibus, rachi latiuscula; umbella glomerata pauciradiata; involucro obsoleto; involucellis unilateralibus herbaceis 3–5-partitis flores luteos æquantibus, laciniis oblongis; fructibus plerumque 7-alatis, alis membranaceis planis. — Gravelly hills, Santa Fé; April to May. — Stem one to two inches long, rising from a thickened perpendicular root or caudex. Petioles and peduncles about the same length, minutely pulverulent-glandular. Leaves thickish, not glaucous, the lamina of the larger two inches long; the pinnæ and segments little crowded. Flowers crowded in the monœcious umbellets, on very short pedicels; the central ones staminate; the marginal pistillate. The fruit is not mature, but nearly resembles that of no. 275: one of the mericarps bears two (usually unequal) wings on the back; the other only one. It is a well-marked species.

275. C. montanus, *Nutt. in Torr. & Gray, Fl.* 1. *p.* 624. With the preceding, in one locality only; April, May. — The specimens accord very well with an authentic one from Nuttall (in *herb. Torr.*), except that the foliage is more glaucous, and the segments of the leaves more crowded, in these respects more nearly resembling C. glaucus. But the species is well characterized by the conspicuous scarious and silvery white, somewhat cyathiform involucre and involucels, marked with greenish ribs, each about 5-parted, the involucels into obovate and obtuse entire divisions, the involucre into similar or

often 2–3-cleft divisions. The marginal flowers are pistillate only, and fertile; the central are staminate. My specimen exhibits scarcely full-grown fruit, with one of the mericarps 4-winged, the other quite uniformly 3-winged (but Nuttall's specimen shows some 10-winged fruits), and the wings are broad and membranaceous, often unequal. Frequently the mericarps appear to be more or less dislocated, and one is often imperfect. Although the commissure is nearly plane, the albumen shows a manifest tendency to become involute; and in a specimen gathered by Fremont in his second expedition (in *herb. Torr.*), with perfectly mature fruit, the section of the albumen is strictly semilunar, as is also the case in a smaller degree in C. campestris and even in C. glomeratus. The genus might, therefore, as well be referred to the Campylospermæ, if there were a tribe to receive it: but as the wings belong to the primary juga, it cannot be placed in the Elæoselineæ. — In Fremont's specimen the carpophore is seen to be free and 2-parted, just as in C. campestris; and the fleshy root is fully six inches long and much thickened downwards.

276. THASPIUM? MONTANUM (sp. nov.): glaberrimum; caule erecto gracili e radice fusiformi crassa; foliis biternatisectis, foliolis cuneiformibus trifidis, lobis oblongis lanceolatisve nunc linearibus integris vel majoribus incisis; petiolis longe spathaceo-dilatatis; involucro nullo; involucello e foliolis circ. 9 setaceis inæqualibus pedicellos æquantibus. — Sunny declivities, at the foot of mountains, along Santa Fé Creek; April and July. — There are two forms in the collection; one, probably the vernal state, is only a span high, with the leaves cut into linear or lanceolate divisions; the other, probably gathered in July, is a foot or two in height and with coarser foliage. There is apparently no other distinction. The base of the stem is clothed with brown vestiges of radical sheaths. The flowers are bright yellow. One specimen exhibits half-grown fruit, which agrees very well with Thaspium, except that the dorsal wings are rudimentary: the intervals show single or double vittæ.

†277. An Umbellifera Cœlosperma, in fruit only, not determined. Near the Mora River, in an elevated, rocky region; August.

278. CORIANDRUM SATIVUM, *Linn.* Naturalized around Santa Fé. It occurs in all the collections made in Northern Mexico.

CORNACEÆ.

†279. CORNUS STRICTA, *Lam.* Between Independence and Council Grove, in bottom land.

280. C. STOLONIFERA, *Michx.*; *Torr. & Gray, Fl.* 1. *p.* 650. Shady banks of Santa Fé Creek, close to the water; May, June, in flower.

LORANTHACEÆ.

281. PHORADENDRON JUNIPERINUM (*Engelm. Mss.*): "glabrum, caule articulato divaricatim ramosissimo ramisque teretibus; ramulis compressis; foliis squamæformibus connatis truncatis vix cuspidatis pelviformibus breve ciliatis; spicis fœmineis lateralibus oppositis abbreviatis bifloris; floribus bractea inferiore majore et duabus lateralibus in cupulam connatis ciliatis fultis globosis 3- (rarissime 4-) lobis." *Engelm.* — "Parasitic on the two kinds of Shrub Cedar (Juniperus) which grow on the hills and elevated plains about Santa Fé, and on no other tree; sometimes forming clusters of more than a foot in diameter and three fourths of a foot in height. Wherever they are found, they abound on many neighbouring trees. The berry is globose, glossy, of a light champagne color, with a tinge of red when dried." *Fendl.* — The specimens are all fertile and in fruit; so that it is not known whether the plant has the anthers of the genus, but of this there is little doubt, as the species is apparently too closely allied to the Phoradendron Californicum, *Nutt.*, which is "parasitic on a Strombocarpus" (Prosopis).*

* The genus *Phoradendron* has recently been briefly indicated by Nuttall (in *Jour. Acad. Philad. n. ser.* 1. *p.* 185), but was unknown to Dr. Engelmann when he communicated to me the subjoined characters of *Viscum*, *Arceuthobium*, and *Spiciviscum*, Engelm., and of some species of the latter, the name of which I have necessarily changed to Phoradendron.

"1. VISCUM, *Linn.* Flores diœci *campanulati*. *Fl. masc.* Perianthium 4 fidum; *antheræ lobis totis adnatæ multicellulosæ, poris plurimis dehiscentes*. *Fl. fœm.* Calyx tubo cum ovario connato, margine integro, limbo obsoleto. Corolla 4-petala, summo calyci inserta. Ovarium inferum, uniloculare; ovulo unico pendulo: stigma sessile, obtusum, subbilobum. Bacca pulposa, corolla persistente coronata, monosperma. — Frutices gerontogei, foliosi, parasitici; foliis oppositis; floribus masculis glomeratis terminalibus; fœmineis in spicas articulatas breves terminales congestis, in quævis bracteæ axilla singulis.

"I have examined only Viscum album, and based the characters on that species.

"2. SPICIVISCUM (nov. gen.) [lege PHORADENDRON]. Flores diœci *globosi*. *Fl. masc.* Perianthium 3- (raro 2- s. 4-) lobum; *antheræ lobis imis adnatæ, transverse biloculares, poris s. rimulis verticalibus duabus dehiscentes*. *Fl. fœm.* Perianthium 3- (raro 2- s. 4-) lobum. Ovarium inferum, uniloculare; ovulo unico pendulo: stigma sessile obtusum. Bacca pulposa, perianthio persistente coronata, monosperma. — Frutices Americani foliosi s. aphylli, parasitici; floribus in spicas axillares longiores interruptas articulatas s. abbreviatas dispositis, sæpe pluribus supra quævis bracteæ axillam rhachidi immersis; bracteis abbreviatis connatis vaginulam pelviformem formantibus.

"3. ARCEUTHOBIUM, *M. Bieb.* Flores diœci, *ovati, compressi*. *Fl. masc.* Perianthium tripartitum, *antheræ lobis mediis adnatæ, globosæ, uniloculares, rimula transversa dehiscentes*. *Fl. fœm.* Perianthium brevissime stipitatum, bidentatum. Ovarium inferum, uniloculare; ovulo unico pendulo: stigma sessile conicum. Bacca (pulposa ?) corolla persistente coronata, monosperma. — Frutices gerontogei et Americani, aphylli, articulati; foliis ad squamas connatas pelviformes reductis; floribus axillaribus terminalibusque, masculis 1 – 3, fœmineis singulis.

† 282. Arceuthobium Oxycedri, *M. Bieb.?* (A. gracile, *Engelm, Mss.*) A slender form, or perhaps an undescribed species, as Dr. Engelmann considers it; but the fruit is unknown. Mountain-sides, around Santa Fé, parasitic on Pinus edulis, *Engelm.*

283. A. Oxycedri, *M. Bieb.?* (A. robustum, *Engelm. Mss.*) Ravines, on the lower part of the mountains around Santa Fé, parasitic on Pinus brachyptera, *Engelm.*; March, April, in young fruit. — The same as Oregon, Californian, and Mexican speci-

" PHORADENDRON, *Nutt.*

* *Aphylla.*

1. [P. Californicum, *Nutt. l. c.* Mountains of California. Perhaps same as the next.]

2. " P. juniperinum, *Engelm. supra.* Santa Fé.

* * *Foliosa.*

3. P. flavescens (*Nutt. l. c.*): " ramis teretibus; foliis obovatis in petiolum attenuatis 3-nerviis, junioribus puberulis; spicis folio brevioribus; bracteis truncatis ciliatis; floribus in quovis articulo 6 – 10 depresso-globosis annulato-carinatis parce pubescentibus 3- (rarissime 2-) lobis. (V. flavescens, *Pursh.*) — On Platanus and Ulmus, in the woods of the lower Ohio and from there south; on Populus, along the Rio Grande below Santa Fé (*Dr. Wislizenus*). A well-known species; flowers half a line in diameter.

4. " P. orbiculatum (sp. nov.): ramis teretibus; foliis orbiculatis s. ovato-orbiculatis breviter et abrupte petiolatis indistincte trinerviis pubescentibus demum glabratis; spicis folio brevioribus puberulis, etc., ut supra. — On different species of Quercus; on Q. nigra, sterile hills of Arkansas (*Engelm.*); on several Oaks, San Felipe, Texas (*Lindheimer*). — Leaves on the older branches exactly orbicular, 6 to 10 lines in diameter; young leaves somewhat longer than wide: petioles a line and a half long: flowers half a line in diameter.

5. " P. tomentosum: tomentosum; ramis teretibus; foliis obovatis s. oblanceolatis obtusis in petiolum brevem breve attenuatis, senioribus subtus obscure trinerviis; spicis masculis folium longe superantibus; bracteis truncatis, articulis elongatis multi- (15 – 25-) floris; spicis fœmineis folio subbrevioribus oppositis s. verticillatis ad apicem caulis paniculatim congestis, articulis brevioribus sub 8-floris; floribus immersis depresso-globosis annulato-carinatis puberulis 3- (rarissime 4-) lobis. (V. tomentosum, *DC. Prodr.* 4. *p.* 670.) — On Algarobia and one or two other Mimoseæ, near Rinconada, Northern Mexico, *Dr. Gregg.* — No doubt the same as De Candolle's plant, which was collected in Northern Mexico by Berlandier, also on Mimoseæ. Leaves an inch or one and a quarter long, and half as wide. Sterile spikes one and a half to two and a half inches long: female spikes only about an inch long: flowers very similar to those of both the foregoing species, and of the same size or rather smaller. Fruiting spikes slightly elongated, an inch to an inch and a half long: berries one line and three fourths to two lines in diameter.

6. " P. lanceolatum (sp. nov.): glaberrimum; ramis teretibus; foliis lanceolatis elongatis subfalcatis obtusiusculis in petiolum brevissimum sensim attenuatis 3 – 5-nerviis; spicis masculis folio brevioribus; bracteis triangularibus connatis; articulis 8 – 18-floris; floribus immersis globosis 3- (rarius 4-) lobis. — On 'Live-Oak,' Rinconada, *Dr. Gregg.* — Leaves 3 inches long, half an inch wide: sterile spikes an inch and a half to two inches long. Flowers less than a line in diameter; distinguished from those of the foregoing species by being destitute of the horizontal edge, and entirely glabrous, as is the whole plant. Anthers very distinct, similar to the common form of two-celled anthers, opening longitudinally, while in the other species they open by two pores. — Apparently near V. Schiedeanum, *DC.*, but distinguished by the terete branches." *Engelm. Mss.*

mens, which Mr. Bentham and others state that they cannot distinguish from the A. Oxycedri of the Old World.

CAPRIFOLIACEÆ.

†284. SYMPHORICARPUS VULGARIS, *Michx.* Pawnee Fork bottom. — Var. foliis incisis v. pinnatifidis. Santa Fé Creek.

†285. S. OCCIDENTALIS, *R. Br.; Torr. & Gray, Fl. 2. p. 4.* Poñi Creek, between Bent's Fort and Santa Fé.

286. SAMBUCUS PUBENS, *Michx.* Margin of Santa Fé Creek; June, in flower.

RUBIACEÆ.

287. GALIUM BOREALE, *Linn.* Shady banks of Santa Fé Creek; June, July.

288. G. FENDLERI (sp. nov.): perenne; caulibus e basi sublignosa adsurgentibus gracilibus pube minuta scabrida subcinereis; foliis quaternis linearibus ($\frac{1}{4}$ unc. longis) acutis uninerviis undique hispidulo-scabridis subcinereis internodio multum brevioribus; pedunculis axillaribus et terminalibus brevibus 3–7-floris; floribus pallide luteis breviter pedicellatis; ovario fere glabro (fructu ignoto). Var. β. superne subglabra; foliis paulo longioribus. — Sunny side of high mountains, valley of Santa Fé Creek; July, in flower only. — Plant 9 to 12 inches high; the leaves and stems more or less cinereous with a minute and close scabrous pubescence. This, however, is nearly wanting, except on the lower leaves and the main stems, in the var. β., which is a more developed state, and a good deal resembles G. trifidum. The ovary shows a few minute bristly points, so that perhaps the fruit is not smooth. The flowers are about as large as in G. trifidum and are said by Fendler to be "pale yellow."

289. G. ASPERRIMUM (sp. nov.): annuum? caulibus diffusis angulis retrorsum aculeolatis; foliis omnibus senis lanceolatis basi attenuatis vel inferioribus obovato-lanceolatis apice setigero-acuminatis glabris nitidis marginibus carinaque subtus retrorsum aculeolatis asperrimis, ramealibus parvis pedunculo multum brevioribus; cymis paniculatis plurifloris trichotomis; petalis albis majusculis; ovario pilis brevibus uncinatis dense tecto (fructu ignoto). — Wet places, near irrigating ditches, Santa Fe; June. — Plant in aspect between G. Aparine and G. asprellum. The specimens, not yet in fruit, are apparently erect, and only 7 to 14 inches high. The lower leaves are three fourths of an inch long, but the upper and those of the flowering branches much reduced in size, so that the flowers, which are larger than in G. spurium (corolla two lines in diameter; petals 3-nerved, ovate, acuminate), form a somewhat naked pyramidal panicle, occupying the upper part of the stem. The capillary peduncles are one half to three fourths, the pedi-

cels about one fourth, of an inch long. I am not sure that the root is annual. The character of G. Mexicanum, *H. B. K.*, agrees pretty well with this plant, except that the leaves of that species are in eights.

†290. CEPHALANTHUS OCCIDENTALIS, *Linn.* Council Grove, &c.

291. HEDYOTIS (HOUSTONIA) RUBRA. (Houstonia rubra, *Cav. Ic. 5. t. 474*; *Benth.! Pl. Hartw. p. 15.*) Foot of dry, gravelly hills, seven miles southwest of Santa Fe; May. Flower bluish-red. — This plant is diœcio-dimorphous in the same manner as H. cærulea (*cf. Torr. & Gray, Fl. 2. p. 38*). (Lindheimer and Wright have also gathered the plant in Texas.

†292. H. (AMPHIOTIS) STENOPHYLLA, *Torr. & Gray, Fl. 2. p. 41.* Prairie, between McNees Creek and Cold Spring, of the Cimarron; August.

VALERIANACEÆ.

293. VALERIANA EDULIS, *Nutt. in Torr. & Gray, Fl. II. p. 48.* Elevated, rocky region from Las Vegas to the Mora River; Aug. — The root of this plant furnishes the principal article of food of the "Root-diggers" of the country around the Great Salt Lake, &c. Dr. Torrey assures me that the V. ciliata, *Torr. & Gray*, of Canada and the Western States, is the same species; and these specimens, which show the ciliate leaves, confirm that view. The plant is subdiœcious, as was long since remarked by Mr. Sullivant.

294. V. SYLVATICA, *Richards. Appx. Frankl. Journ. ed. 2. p. 2*; *Torr. & Gray, Fl. 2. p. 47.* Rocky and shady declivities, along Santa Fé Creek; April and May, in flower; June, in fruit.

COMPOSITÆ.

†295. VERNONIA NOVEBORACENSIS, *Willd.*, var. Ford of the Arkansas; September.

296. PECTIS (PECTIDOPSIS, *DC.*) ANGUSTIFOLIA, *Torr.! in Ann. Lyc. N. Y. 2. p. 62.* Between Santa Fé and Pecos; Aug. (535.*) — Fine specimens of this rare plant were gathered on the Upper Arkansas by Fremont, in his second expedition, and by Lieut. Abert. It has a true *pappus coroniformis*.†

* From this onward, the numbers inclosed in parentheses, and usually placed after the habitat, are those under which the specimens have been distributed.

† The pappus in the *Eupectideæ* presents such numerous variations and gradations, that it will be necessary either to introduce several additional genera, undistinguishable in habit, or to extend the character of Pectis, and restore to it Pectidopsis, Pectidium, and perhaps Lorentea also. Considering the latter to be the proper mode, I have two additional subgenera to propose, with some new species, viz.: —

†297. LIATRIS SQUARROSA, *Willd.* Near Fort Leavenworth, &c.; August. (332.)

†298. L. SQUARROSA, δ. INTERMEDIA, *Torr. & Gray, Fl. 2. p.* 68. Prairies on the Arkansas below Turkey Creek; September. (331.)

1. PECTIS § HETEROPECTIS. Pappus coroniformis et 1–4-aristatus, vel saltem fl. disci muticus; aristis serrulato-scabris.

P. FASTIGIATA (sp. nov.): erecta, glabra; caule fastigiato-ramosissimo; foliis marginibus revolutis linearifiliformibus mucronatis grosse glandulosis basi setis utrinque 2–3 instructis; corymbis terminalibus confertis; pedicellis setaceo-bracteatis capitula subæquantibus; involucri 20-flori squamis 8 linearibus subcomplicatis apice obtusis uniglandulosis; ligulis 6–8 oblongis conspicuis; corollis disci subregularibus; acheniis parce hispidulis; pappo coroniformi et in fl. radii discique exteriorum 1–2-aristatis, aristis corolla dimidio brevioribus basi vix dilatatis. — Dry hills near Austin, Texas, *Mr. Charles Wright;* flowering in September. — A pretty annual, from 4 to 6 inches high; the fastigiate branches terminated by dense corymbs; the flowers bright golden-yellow; rays two lines long. Leaves an inch or more in length, half a line wide. The plant bears some resemblance to P. tenella, *DC.*, and probably also to P. uniaristata, which must likewise belong to this section.

P. FILIPES (*Harv. & Gray in Pl. Coult. ined.*): subglabra, erecta; caule ramosissimo diffuso; foliis angusto-linearibus obtusis muticis marginibus revolutis scabris pauciglandulosis basi parce piliferis; pedunculis capillaribus ebracteatis folia superantibus; involucri 10-flori squamis 5 eglandulosis basi complicato-carinatis apice dilatato-spathulatis obtusis; ligulis 5 obovatis; corollis disci manifeste bilabiatis; acheniis parce puberulis; pappo radii biaristato, disci coroniformi rariusve uniaristato, aristis e basi subulata setiformibus sursum scabris divergentibus. — California, *Coulter* (no. 329). — Plant of the size and aspect of P. linifolia.

P. COULTERI (*Harv. & Gray, l. c.*): puberula, diffuse ramosa; foliis angusto-linearibus obtusis crebre et grosse glandulosis marginibus revolutis basi setis brevibus dentibusve piliferis auctis; pedunculis folia subsuperantibus capitulum 20-florum adæquantibus ebracteatis; squamis involucri 5 oblongis carinatis; corollis disci valde bilabiatis; acheniis puberulis; pappo radii 3–4-, disci 2–3-aristato; aristis rigidis retrorsum serrulato-hispidis. — California, *Coulter* (no. 330). — Leaves half an inch long. Heads solitary, half an inch long.

P. MULTISETA, *Benth.*, which also has retrorsely barbed awns, equally belongs to this section, which is remarkable for the tendency to have a more reduced pappus in the disk than in the ray.

2. PECTIS § PECTOTHRIX. Pappus e setis aristisve gracilibus basi vix dilatatis 6–20 (raro pauciori-bus) serrulato-scabris vel barbellatis constans, conformis, aut fl. radii brevis auriculæformis.

P. PAPPOSA (*Harv. & Gray, l. c.*): glabra; caule ramoso diffuso; foliis angusto-linearibus gracilibus sparsim grosse-glandulosis basi utrinque 3–4-setiferis; pedunculis 1–3-bracteatis folia subsuperantibus; capitulis solitariis corymbosisve; involucri circ. 20-flori squamis angusto-linearibus complicatis glandulis parce punctatis obtusis; ligulis 6–8; corollis disci bilabiatis; acheniis uncinato-pubescentibus; pappo fl. radii dimidiato-auriculæformi, disci e setis barbellatis 15–20 valde inæquælongis. — California, *Coulter* (no. 331). — Bristles of the disk-pappus slender, all alike, except in size; the longest scarcely equalling the corolla, the shortest one fourth of that length, all denticulate-barbellate, the barbellæ spreading or upturned: pappus of the ray composed of three more or less united, very short and obtuse scales.

P. DIFFUSA, *Hook. & Arn.* (P. arenaria, *Benth.*), and P. ELONGATA, *Kunth*, belong to this section.

P. TENELLA, *DC.* (of which copious specimens were gathered by Dr. Gregg on the Rio Grande east of Mier) connects this group with Pectis proper; the bristles of the pappus being somewhat enlarged toward the base. Their number varies from three to five in the ray, and from three to six in the disk.

299. L. PUNCTATA, *Hook. Fl. Bor.-Am.* 1. *p.* 306. *t.* 55. From Cottonwood Creek, of the Arkansas, to San Miguel, New Mexico. (328.) "One specimen had white flowers."

† 300. L. SPICATA, *Willd.* Low prairie, Middle Spring, Cimarron; August. (299.)

† 301. L. PYCNOSTACHYA, *Michx.* Dry prairies, &c., south of Fort Leavenworth: August. (330.)

302. L. SCARIOSA, *Willd.* Council Grove to Fort Leavenworth; August. (333.) Some specimens exhibit a branched inflorescence.

† 303. CLAVIGERA BRACHYPHYLLA (sp. nov.): subcinereo-puberula, herbacea; caulibus humilibus (vix ped.) foliosis; foliis oblongo-ovatis integriusculis subpetiolatis triplinerviis minutim resinoso-punctatis (½ unc. longis); capitulis circ. 12-floris in ramulos subaphyllos vel pedunculos racemoso-paniculatos solitariis paucisve digestis; squamis involucri lanceolatis acutiusculis, extimis brevibus ovatis mucronatis; acheniis pubescentibus; pappo breviter plumoso. — Foot of high rocks, two miles east of the Mora River; August. (339.) — This species is remarkable for a pappus which is almost plumose to the naked eye, so as to leave as little distinction between this genus and Kuhnia, on the one hand, as there is between it and Brickellia, on the other; the difference being merely one of degree. There is an undescribed and remarkable species in Gregg's collection.*

† 304. KUHNIA EUPATORIOIDES, *Linn.* Near Council Grove; August. (340 and 348.) — Perhaps the species of Kuhnia of De Candolle with pentagonal achenia and plumose pappus may be joined to Carminatia, *Moç. & Sess.*; of which fine specimens occur in Coulter's Mexican collection.

† 305. K. EUPATORIOIDES, γ. GRACILIS, *Torr. & Gray, Fl. 2. p.* 78. Along the Mora River; August. (342.)

† 306. BRICKELLIA GRANDIFLORA, *Nutt.; Torr. & Gray, Fl. 2. p.* 80: var. with the leaves unusually prolonged-acuminate. Precipitous side of a ravine, on Rock Creek, a source of the Canadian; August. (335.)

307. B. FENDLERI (sp. nov.): glabra, minute scabrida; foliis suboppositis alternisve deltoideo-cordatis acutis grosse dentatis petiolo duplo longioribus, dentibus plerum-

* CLAVIGERA SPINULOSA (sp. nov.): fruticosa, ramosissima, glabrata; foliis parvis confertis lineari-lanceolatis rigidis cuspidatis spinuloso-dentatis; capitulis 5–8-floris in paniculas angustas congestis folia excedentibus; involucri squamis oblongis mucronulatis; acheniis pubescentibus; pappo barbellato. — High plain near Chihuahua; April, *Dr. Gregg.* — A very bushy under-shrub, one to two feet high. The specimens bear the leaves of the preceding year, and the branchlets are covered with naked leaf-buds, just expanding. Leaves crowded or fascicled, alternate, occasionally opposite, one half or two thirds of an inch long, spinulose with from 3 to 6 strong and sharp teeth on each side.

que calloso-apiculatis; capitulis corymboso-paniculatis parvulis pedicellis nudis sublongioribus; involucri circ. 30-flori squamis puberulis omnibus appressis obtusis; acheniis glaberrimis. — Foot of mountains on the sunny side, along the creek, eleven miles above Santa Fé; July. (347.) — Plant much smaller in all its parts than the preceding. Stem a foot or so in height. Leaves 1½ inch long, coarsely and sharply toothed, scarcely acuminate, glabrous, but minutely resinous-dotted. Heads more paniculate, barely one fourth of an inch long, with few if any loose bractlets at the base, and these conformed to the proper involucral scales, ovate, and obtuse or slightly acute. Achenia 5-angled with five intermediate nerves, which are sometimes inconspicuous.

308. B. (Bulbostylis) Californica, *Torr. & Gray, Fl. 2. p.* 79: var. foliis plerisque subcordatis. — Rocky hill-side on the Mora River, and eight miles eastward, in bottom land; Aug. (346.) — The cauline leaves are mostly cordate, and with rather longer petioles than in the Californian specimens collected by Douglas; but the plant of Hartweg's recent collection is wholly intermediate. Mr. Bentham (in *Bot. Voy. Sulph.*) has very properly carried out the intimation given in the *Flora of North America*, and annexed Bulbostylis to Brickellia. The pappus is so strongly barbellate-denticulate in some species (as in the original B. cordifolia and especially in B. cylindracea, *Gray & Engelm.*, from Texas, and an undescribed Mexican species found by Dr. Wislizenus *) that Clavigera is separated by a merely arbitrary character.†

* Brickellia (Bulbostylis) Wislizeni (sp. nov.): glanduloso-hirta; caulibus seu ramis elongatis simpliciusculis foliosis; foliis oppositis internodiis longioribus ovato-oblongis e basi subcordata arcte sessilibus argute serratis acutis lucidis undique hirtello-scabris triplinerviis subtus grosse reticulatis; ramulis floridis brevibus monocephalis in racemum laxum foliosum dispositis; involucri circ. 20-flori squamis pauciusculis 2–3-seriatis laxis omnibus lanceolatis sensim acuminatissimis, intimis attenuatis glabris pappum crebre serrulatum subæquantibus, exterioribus ⅓ brevioribus glanduloso-hirtis; acheniis sericeis. — Mountains around Cosiquiriachi, west of Chihuahua, *Dr. Wislizenus.* — Herbaceous stems, or branches, 18 inches high. Leaves thin, an inch and a half in length, the coarsely reticulated veins very prominent underneath. Heads over half an inch in length; the pappus white and copious. Corolla ochroleucous.

† There is a well-marked, undescribed Stevia in Coulter's Mexican collection, apparently resembling S. dissitifolia and S. podocephala, *DC.*, which may be thus characterized: —

Stevia trichopoda (*Harv. & Gray, ined.*): herbacea, glanduloso-pubescens; caulibus gracilibus erectis; foliis oppositis longe dissitis (inferioribus desunt) ovalibus utrinque obtusis crenatis hispido-scabris triplinerviis venosis; cyma nuda effusa; capitulis longe pedicellatis sparsis; corollis involucri squamis acutis glandulosis duplo longioribus, tubo purpurea, limbo pallida irregulari subpalmato (an semper?); acheniis glabriusculis; pappo paleaceo brevi et 3-aristato, aristis corollam adæquantibus basi submarginatis. — The leaves of the specimen are an inch, the internodes 3 to 4 inches, in length; the cyme several times dichotomous, with slender, diffusely spreading branches, dividing into monocephalous peduncles half an inch or an inch long. The awns of the pappus, as in some other species, are somewhat scarious-dilated towards the base. This dilatation is so

† 309. EUPATORIUM PURPUREUM, *Linn.* One hundred miles west of Independence; August. (344.)

much increased as to convert the awns into *paleæ* in a plant of Dr. Wislizenus's Mexican collection, which, being also somewhat peculiar in the involucre and in the great size of the flowers, may be taken as the type of a new genus, intermediate between Stevia and Palafoxia: —

CARPHOCHÆTE, *Nov. Gen.*

see DC. Wright 1. 89

Capitulum 4-florum homogamum. Involucrum cylindricum; squamis 5–6, lanceolatis, parce striatis, laxe imbricatis, exterioribus brevioribus. Receptaculum nudum. Corollæ tubulosæ hypocraterimorphæ, involucrum duplo superantes, lobis oblongis glabris. Styli rami filiformes, glabri. Achenia gracilia, pentagona, glabrata. Pappus biformis, e paleis 5 brevibus cuneato-truncatis hyalinis enerviis, et 5 alternis (ex angulis achenii ortis) elongato-lanceolatis pinnato-striatis uninerviis, nervo crasso in aristam serrulatam corolla subbreviorem sensim exserente. — Herba spithamæa, glaberrima, e basi suffruticosa multicaulis; foliis oppositis et in axillis fasciculatis, elongato-linearibus, angustis, integerrimis; corymbo terminali oligocephalo; pedunculis simplicibus nudis; floribus ut videtur roseis, fere unciam longis.

C. WISLIZENI. — Mountains west of Chihuahua, near Cosiquiriachi, *Dr. Wislizenus*. — The plant is not glandular, nor sprinkled with resinous atoms, except a few on the tube of the corolla. The rigid leaves are two inches or more in length, and one line wide. The scales of the involucre are rather lax, with somewhat scarious and spreading acuminate tips. — The plants collected at Cosiquiriachi, in the Sierra Madre, are in great part new. Among them is a well-marked Eupatorium, of De Candolle's series *Eximbricata*, viz.: —

EUPATORIUM HEDERÆFOLIUM (sp. nov.): fruticosum; ramis teretibus puberulis; foliis oppositis longe petiolatis subtriangulato-cordatis obtusissimis grosse crenato-dentatis membranaceis glabellis punctatis basi trinervatis; corymbis terminalibus subsessilibus densis; capitulis breviter pedicellatis 10–12-floris; involucri squamis 9 æqualibus oblongis obtusis puberis achenia ad angulos hirtella subæquantibus. — "Cosiquiriachi, common: shrub 3 to 4 feet high: flowers white," *Dr. Wislizenus*. Leaves thin, bright green above, an inch or an inch and a half in length and breadth; the slender petiole an inch long.

The Texan plant provisionally appended to Ageratum, under the name of A.? (Micrageratum) Wrightii, along with a second species recently detected in Northern Mexico, must be considered to constitute a new genus, perhaps more nearly allied to Phalacræa, *DC.*, viz.: —

TRICHOCORONIS, *Nov. Gen.*

Capitulum homogamum multiflorum. Involucrum disco brevius, e squamis laxis 12–18 subbiseriatis æqualibus membranaceo-herbaceis constans. Receptaculum conicum, nudum. Corolla pl. m. glandulosa; tubo angusto in faucem late campanulatam 5-dentatam abrupte dilatato. Antheræ apice brevissime appendiculatæ. Styli rami exserti, lineares, complanati, obtusi. Achenia pentagona, secus angulos hispidula, pappo brevissimo multisetuloso-coroniformi sæpeque 5-aristulato superata. — Herbæ subpaludosæ vel aquaticæ, basi repentes; caulibus adsurgentibus vel emersis, ramosis, viscoso-villosis; foliis oppositis, seu ramealibus sparsis, dentatis, sessilibus, pl. m. amplexicaulibus; pedunculis gracilibus, nudis, solitariis vel corymbosis; floribus roseo-purpureis.

1. T. WRIGHTII: adscendens; foliis lanceolato-oblongis subserratis e basi lata subcordata arcte sessilibus, infimis subspathulatis; capitulis parvis (sesquilineam latis) plurimis paniculato-corymbosis; squamis invo-

†310. E. AGERATOIDES, *Linn.* One hundred miles west of Independence. (345.)

†311. E. PERFOLIATUM, *Linn.* Near Fort Leavenworth; September. (337.)

312. DIETERIA CORONOPIFOLIA, *Nutt.; Torr. & Gray, Fl. 2. p.* 101. On the Arkansas, and between Santa Fé and Pecos. (352.) — In cultivation, from Texan seeds, this proves to be a very showy annual. The heads, with the expanded bright violet-colored rays, are an inch and a half in diameter; the disk golden-yellow. The pappus is often white.

†313. ASTER LÆVIS, *Linn.; Torr. & Gray, l. c.* Valley of Santa Fé Creek, at the foot of mountains, nine miles above the town. (362.)

†314. A. AZUREUS, *Lindl.; Torr. & Gray, l. c.* Prairies on the Kansas River. (366.)

†315. A. SAGITTÆFOLIUS, *Willd.; Torr. & Gray, l. c.* Council Grove, &c. (357.)

316. A. SERICEUS, *Vent.* Council Grove, &c.; September. (355.)

†317. A. FENDLERI (sp. nov.): caulibus spithamæis e caudice sublignosa pluribus adscendentibus rigidis parce hispidulis; ramis corymboso-paniculatis monocephalis; foliis sessilibus rigidis coriaceis parvis linearibus mucronulatis integerrimis glabris uninerviis marginibus hispido-ciliatis, infimis subspathulatis, ramealibus brevissimis; involucri campanulati squamis 3-seriatis lineari-oblongis glanduloso-scabrellis mucronulatis, exterioribus herbaceis obtusis laxis, interioribus acutis paulo longioribus; acheniis pubescentibus. — On the Ocaté Creek and the Rio Colorado (Upper Canadian); Aug. (372.) — A low species, of the group *Ericoidei*, or perhaps *Amelli*, with much the aspect of Diplopappus

lucri lineari-oblongis acutiusculis; tubo corollæ fauce breviore; pappo e setulis plurimis subcoroniformi-concretis et sæpe 5-aristellatis. — AGERATUM? (MICRAGERATUM) WRIGHTII, *Torr. & Gray, ined. in Proceed. Amer. Acad.* 1. *p.* 46. — Low places in the prairies along the Colorado River above Columbus, Texas, *Mr. Charles Wright.* — A span to a foot high; the stems very leafy, much branched. Leaves 6 to 8 lines in length.

2. T. RIVULARIS (sp. nov.): fluitans; ramis emersis; foliis obovato-spathulatis sinuato-incisis grosse-dentatisve basibus longe angustatis connato-amplexicaulibus; pedunculis solitariis vel binis monocephalis; capitulo majusculo (3–4 lin. lato); squamis involucri circ. 12 ovalibus obtusissimis; tubo corollæ gracili faucem subhemisphæricam æquante; pappo exaristato. — In springs and small flowing streams, Monterey and Cerralbo, *Dr. Gregg, Dr. Edwards.* On the Mexican side of the Rio Grande above Presidio, *Mr. Wright.* — A near ally of the preceding, but truly aquatic; the stems somewhat succulent. Leaves one or two inches long, with a few coarse and obtuse teeth. The flowers are said to be yellow by Dr. Gregg, but they do not appear to be so in the specimens; and Mr. Wright pronounces them to be purple. The pappus consists of numerous minute setæ, rather than squamellæ, which are more or less confluent or coroniform-united at the base, just as in T. Wrightii, but there is no trace of any stouter bristles or awns. These plants certainly do not belong to Ageratum; but if the divisions Alomieæ and Agerateæ of De Candolle are to be combined, this genus should stand next to Phalacræa, *DC.*

linariifolius. The longer leaves are only three fourths of an inch in length. Involucre one fourth of an inch in diameter. The rays have apparently been violet or blue.

†318. A. MULTIFLORUS, *Ait.* On the Arkansas and Kansas. (368.)

†319. A. MULTIFLORUS, γ. COMMUTATUS, *Torr. & Gray, l. c.* Rock Creek, New Mexico; August. (367.)

320. A. SIMPLEX, *Willd.; Torr. & Gray, l. c.* Santa Fé; July, August. (360.)

†321. A. CARNEUS, *Nees, Ast. p.* 96. On the Arkansas; September. (370.)

†322. A. MISER, γ. DIFFUSUS, *Torr. & Gray, Fl. 2. p.* 130. Bottoms beyond the upper ferry of the Kansas River; September. (365.)

†323. A. n. sp.? allied to A. longifolius and A. anomalus; a single specimen, too incomplete for safe description. Two miles east of the Mora River; August. (364.)

†324. A. OBLONGIFOLIUS, *Nutt.* Prairies and creek-bottoms, Council Grove; September. (369.)

†325. A. OBLONGIFOLIUS, *Nutt.;* a dwarf variety. Rock Creek, New Mexico; August. (371.)

†326. A. (OXYTRIPOLIUM) DIVARICATUS, *Torr. & Gray, Fl. 2. p.* 163. Arkansas bottom; September. (363.)

327. ERIGERON CANADENSE, *Linn.* Santa Fé Creek; July to October. (377.)

†328. E. DIVARICATUM, *Michx.* On the Arkansas; September. (382.)

†329. E. BELLIDIASTRUM, *Nutt. in Trans. Amer. Phil. Soc. (n. ser.) 7. p.* 307. Near the ford of the Cimarron and Willow Bar, in deep sand; Aug. (383.) — Dr. Wislizenus also collected it at the northern extremity of the Jornado de Muerto.

330. E. MACRANTHUM, *Nutt.! l. c.; Torr. & Gray, Fl. 2. p.* 173. Mountains, Santa Fé Creek, eleven miles above the town; July. (384.) — The stem bears a few scattered bristles; the flowering branches are a little glandular, as well as the involucre; and the cauline leaves are acute. It therefore connects the E. macranthum of Nuttall with the var. β.

331. E. MACRANTHUM, β. *Torr. & Gray, l. c.* Mountain-sides, ten miles above Santa Fé; July. (376.) — A span high, the branches and peduncles glandular.

332. E. CANUM (sp. nov.): pumilum; caulibus e radice crassa multicipitibus cæspitosis inferne foliosissimis monocephalis foliisque lineari-spathulatis integerrimis undique sericeo-incanis; ligulis albis subuniseriatis involucrum albo-hirsutum duplo superantibus; acheniis glaberrimis; pappo radii et disci conformi duplici, exteriore brevissimo e setis subulato-setaceis. — Dry places, on gravelly hills and at the foot of mountains, Santa Fé; May, June. (375.) — Stems 3 or 4 inches high, apparently forming dense tufts, from a thick perennial root, simple, leafy to the summit, their caudiciform bases imbricated with

the persistent vestiges of former leaves. The foliage, like the stems, is uniformly whitened with a thick and closely appressed silky-hirsute pubescence; the lowest leaves an inch or more in length, including the long tapering base or petiole, the upper shorter, more sessile, and nearly linear, less than a line in width. Head, rays, &c., very like those of E. pumilum. Scales of the involucre somewhat in two series, almost equal. Inner pappus of rather copious, strongly scabrous bristles. — This striking species should probably rank with E. pumilum and E. concinnum in the section Stenactis, *Torr. & Gray, l. c.*, rather than in Pseuderigeron.*

333. E. CINEREUM (sp. nov.): bienne? undique molliter cinereo-pilosum; caule e basi ramoso; ramis adsurgentibus apice longe nudis monocephalis; foliis spathulatis vel lineari-oblongis basi attenuatis integerrimis seu radicalibus paucidentatis incisisve; ligulis numerosissimis gracilibus (albis nunc purpureo tinctis) involucrum hirsutum duplo superantibus; pappo radii et disci conformi duplici, exteriore coroniformi-squamellato, interiore e setis sub-20 fragilibus deciduis. — Var. *a.* is a dwarf, vernal form, only a span high, quite hoary, the primary flowering stems erect and almost scapiform (no. 374 of the distribution). Dry, exposed places around Santa Fé; May. Var. *β.* has taller and more diffuse stems (10 inches high), the leaves almost lanceolate, entire, the lower tapering into slender petioles. Low, sandy banks of the Rio del Norte and of Santa Fé Creek; May to June. (380.) Var. *γ.* is a larger, coarser, and much more leafy state; from the valley of Santa Fé Creek, near irrigating ditches; May to July. (385.) — The heads are as large as those of Bellis perennis, solitary on peduncles, or the naked summit of the stems, of from 2 to 4 inches in length. The species belongs to the first division of the section Phalacroloma, *Torr. & Gray, l. c.*† Some forms of this, or of an allied species (possibly E. affine, *DC.*), with rather less numerous and white rays, and either entire or incised leaves, were gathered at Buena Vista and Encantada by Dr. Gregg.

334. E. FLAGELLARE (sp. nov.): bienne? striguloso-puberulum, pumilum; caulibus gracillimis e basi ramosis, floriferis seu primariis simplicibus superne aphyllis monocepha-

* A Texan species which I refer to the same section is probably Distasis modesta, *DC.*, although the squamellæ and fragile setæ of the pappus are more numerous than in De Candolle's character.

ERIGERON MODESTUM: hirsuto-pubescens, cinereum; caule ramosissimo paniculato-corymboso; ramis monocephalis; foliis subspathulatis linearibusve basi attenuatis imis petiolatis integerrimis; ligulis 30–40 uniserialibus (albis) involucrum canescenti-hirsutum duplo superantibus; acheniis parce pilosulis; pappo radii et disci conformi duplici, exteriore paleaceo-squamellato, interiore e setis fragilibus circiter 12. — Distasis modesta, *DC. Prodr.* 5. *p.* 279? — New Braunfels, Texas, *Lindheimer.*

† From Mr. Lowell's herbarium I find that Dr. Gambell gathered the same species in the vicinity of Santa Fé.

lis, sterilibus patentibus flagelliformibus; foliis spathulatis mucronulatis inferioribus in petiolum gracilem attenuatis integris seu radicalibus parce inciso-lobatis, ramealibus parvulis sublinearibus sessilibus; ligulis numerosis gracilibus (albis purpureo tinctis) involucrum hirsutum duplo superantibus; pappo radii et disci conformi duplici, exteriore coroniformi-squamellato conspicuo, interiore e setis sub-20 fragilibus.—Low, moist places, along Santa Fé Creek; May, June. (381.)—Root slender. Flowering stems 5 to 7 inches high, very slender, few-leaved below the middle, naked and pedunculiform above; the head rather smaller than in the preceding species; the involucre, &c., similar. Lower leaves one to two inches long, including the slender petiole; those of the runner-like sterile branches decreasing to 2 or 3 lines in length. This species should rank next to the foregoing.*

335. DIPLOPAPPUS ERICOIDES, *Torr. & Gray, Fl. 2. p.* 182; & *β.* HIRTELLA: foliis laxis linearibus vel inferioribus spathulatis scabro-glandulosis non strigosis valde hispido-ciliatis. — Sides of ravines in arid places, Santa Fé; also on the Rio del Norte; May, June. (348.) — A tufted, Heath-like, suffruticose plant, of a span or less in height, apparently subject to considerable variation in the foliage; the leaves being sometimes all appressed, linear-subulate or acerose, and hoary with appressed hairs; sometimes less hoary, but showing a close glandulosity; or again (of which the var. *β.* exhibits the most marked form) with the leaves loose or a little spreading, destitute of appressed hairs, but more glandular, and conspicuously fringed with hispid bristles, the longer ones half an inch in length, the lowest strictly spatulate. The same species, in one or two forms, was gathered in arid places, at Albuquerque, by Dr. Wislizenus, and at Chihuahua and Buena Vista by Dr. Gregg. The outer pappus is inconspicuous, and consists of a few very slender, short setæ. The rays are white, sometimes tinged with purple. — At Buena Vista, Dr. Gregg also collected what I take to be a mere variety of this species, with "yellowish" rays.

336. TOWNSENDIA SERICEA, *Hook.! Fl. Bor.-Am. 2. p.* 16. *t.* 119. *β.* PAPPOSA. Santa Fé, on arid hill-sides, less frequently in grassy places; April, May. (349.)—These are fine specimens of the original type of this well-marked genus, with the sessile heads fully as large as in Richardson's and Drummond's specimens (the larger almost an inch in length), and agreeing with them, except that the rays are more fully explanate

* Erigeron decumbens, *Nutt.*, communicated by Mr. Spalding, from the Kooskooskee, Oregon, has bright purplish-blue rays. He also sends E. ochroleucum, *Nutt.*, which is the same as no. 203 of Geyer's Oregon collection. No. 30 of the same collection consists, in my set, of E. pumilum, with E. cæspitosum, *β.* grandiflorum. I mention this, because some transposition or confusion in respect to these numbers must have occurred either in the distribution of the specimens or in the published enumeration.

and exserted (half an inch long, linear, plane when in flower), and the pappus of the ray is copious and similar to that of the disk! — The achenia of all the species, and especially of the annual or biennial ones, are callous-margined, as in Calimeris proper, and the bristly hairs they bear are minutely capitate or glochidate.

337. T. FENDLERI (sp. nov.): biennis? vel perennis, caulescens; strigoso-incana; foliis linearibus elongatis; squamis involucri lanceolato-oblongis acutiusculis late scariosis ciliatis; ligulis lineari-oblongis involucrum duplo superantibus; pappo fl. radii minuto squamellato, disci multisetoso corollam æquantibus achenio sublongioribus. — Gravelly hill-sides, Santa Fé; May to August. (350.) — Probably perennial; the caudex branching, sending up stems of an inch or little more in height, which are simple or branching, and sparingly leafy up to the head. Leaves all linear, slightly dilated upward, less than a line broad at the summit, an inch long; the uppermost, as is usual in the genus, close to the head. Involucre one fourth of an inch in diameter. Rays blue or white, spreading. Bristles of the pappus subulate-setiform, scabrous. — This species most resembles T. Fremontii, *Torr. & Gray*, but is more caulescent, with longer and narrower leaves, the pappus shorter and less denticulate; that of the ray much reduced, as in T. strigosa.

338. T. STRIGOSA, *Nutt. l. c.* Gravelly hills, Santa Fé; May. (351.) — This has a slender, annual root, or rather biennial, as it flowers in the spring. The earlier radical leaves are short, spatulate, and smoothish. Heads less than half an inch broad; the primary ones raised on a nearly naked scape or peduncle half an inch or so in length.*

†339. T. GRANDIFLORA, *Nutt. l. c.* Low prairie, between Ocaté Creek and the Rio Colorado; August. (533.)

340. T. EXIMIA (sp. nov.): hirsuto-pubescens; caulibus e radice annua seu bienni crassa erectis subsimplicibus; foliis spathulato-oblongis oblanceolatisve crassiusculis ciliatis glabratis, summis ad capitulum maximum approximatis eumque sæpius brevioribus; squamis involucri ovato-lanceolatis acuminatissimis late scariosis fimbriolato-ciliatis; ligulis

* I subjoin the characters of an allied species from a more southern region: —

TOWNSENDIA MEXICANA (sp. nov.): strigoso-incana; caulibus e radice annua seu bienni plurimis (2–3-uncialibus) cæspitosis gracilibus diffusis ramosis; foliis spathulato-linearibus majoribus nunc 1–2-dentatis; capitulis pedunculatis primariis longe pedunculatis ebracteatis; involucri squamis oblongis obtusis biseriatis æquilongis, exterioribus anguste scarioso-marginatis; ligulis linearibus patentibus involucrum plusduplo superantibus; pappo fl. radii coroniformi-multisetoso achenio 4-plo breviore, setis tenerrimis glochidato-capitatis; fl. disci e setis circ. 24 subulatis inæqualibus minute barbellatis acheniam corollamque vix æquantibus. — "Saltillo; March. Called *Pimentilla;* used for tooth-wash. Flower white." *Dr. Gregg.* — In the specimens, some of the rays seem to have been bluish or purplish underneath. Heads smaller than in T. strigosa. The delicate bristles of the ray pappus are minutely glochidate, like the hairs of the achenium, and some of them bear one or two lateral decurved teeth.

(cæruleis vel albis) angusto-linearibus involucrum subduplo superantibus; pappo persistente e paleis crassis cartilagineis uniserialibus basi concretis coroniformi, fl. radii brevissimo subæquali, disci inæquali, paleis 1 – 3 in squamellis aristiformibus productis corollam atque achenium late obovatum calloso-marginatum pl. m. brevioribus. — Sides of high mountains, Santa Fé Creek, and prairies on the Mora River; June to Aug. (353). — The most striking species of the genus; the upright stems 6 or 7 inches high from a strong tap-root, terminated by solitary heads resembling those of T. grandiflora or still larger (an inch in diameter). Lowest leaves 2 inches long; the upper successively smaller and more sessile. Ray achenia fertile, narrower than those of the disk, which are a line and a half in length, flat, with thickened callous margins. The pappus is of a much firmer texture than in the other species, more paleaceous, the scales few, coroniform-concreted, and perfectly persistent; the 1 to 3 longer ones (of the disk) subulate-aristiform, half or two thirds the length of the mature achenium. — Lieut. Abert also gathered this species on Purgatory River.

†341. EGLETES HUMILIS, *Torr. & Gray! Fl.* 2. *p.* 411, in obs. (Leucopsidium humile, *Benth. Pl. Hartweg, p.* 18.) Valley of Santa Fé Creek; May. (373.) — This is also in Dr. Gregg's North-Mexican collection. The plant is more canescent and the heads smaller than in E. Arkansana, and the pappus, as noted in the *Fl. N. America, l. c.*, is a small crown, the edge of which is evenly cleft into a fringe of numerous setulose teeth. The tube of the disk corolla sometimes becomes thickened and indurated at the base, as in E. Arkansana.*

* It is difficult to say whether this genus should be referred to the Anthemideæ or the Asteroideæ; but if Leucopsidium, *DC.*, has been correctly joined to it, so likewise should be Aphanostephus, *DC.*, which differs in no character of any generic consequence. In E. RAMOSISSIMA (Aphanostephus ramosissimus, *DC.*, and also A. Riddellii, *Torr. & Gray*) the coroniform pappus is minutely fringed, just as in E. humilis. I have had it in cultivation for two years, along with E. Arkansana, with which it well accords in habit. The heads are smaller, but more numerous, and are borne in profusion throughout the summer; the rays are white, and usually finely tinged with pink or purple underneath. I have not observed any thickening of the disk-corollas. — I no longer doubt that Keerlia skirrobasis of De Candolle is founded on a depauperate state of Egletes Arkansana. Dr. Gregg collected specimens of E. ramosissima at Monterey and Buena Vista. — I subjoin the characters of some new heterochromous Compositæ-Asteroideæ of Northern Mexico.

PSILACTIS, *Nov. Gen.*

Capitulum multiflorum, radiatum, heterochromum; fl. radii ligulatis, numerosis, uniseriatis, fœmineis; disci tubulosis hermaphroditis. Involucrum disco brevius, e squamis lanceolatis subherbaceis imbricatum, 3 – 4-seriale. Receptaculum convexum, subalveolatum. Ligulæ 60 – 80, elongatæ, angusto-lineares. Corollæ disci 5-dentatæ. Styli rami breves, appendice triangulari acutiuscula complanata hirtella terminati. Achenia

342. GUTTIERREZIA EUTHAMIÆ, *Torr. & Gray, Fl. 2. p.* 193. Bent's Fort, on the Arkansas; and at Santa Fé, on gravelly hills; Aug. to Sept. (388.)

oblonga, puberula. Pappus radii nullus; disci pilosus, uniserialis, corolla brevior, setis scabris. — Herbæ Mexicanæ, graciles, annuæ, subviscosæ, erectæ, ramosæ; ramis laxe paniculatis monocephalis; foliis linearibus; capitulis parvis; ligulis cæruleis, disco flavo.

1. P. ASTEROIDES: ramis capitulisque viscoso-pubescentibus; foliis integerrimis; involucri squamis linear-lanceolatis subæqualibus 2–3-seriatis laxis; ligulis elongatis; pappo corolla disci paulo breviore e setis circ. 18 fere æqualibus. — Llanos, in the Sierra Madre, west of Chihuahua, *Dr. Wislizenus.* — Stem two feet high, slender. Cauline leaves 1 or 2 inches long, seldom 2 lines wide, membranaceous, somewhat pubescent and ciliate, mucronulate; those of the branchlets small, more pubescent and viscous-glandular. Heads about as large as in Aster ericoides; the involucre rather to be compared with that of Aster Novæ-Angliæ, equally glandular. — This genus would stand between Dieteria and Aster, except from the want of pappus in the ray, which would refer it to De Candolle's subdivision Heteropappeæ with the character a little enlarged. — I have flowering branches of a second species, from Coulter's Mexican collection, viz.: —

2. P. COULTERI: subglabra; foliis (ramealibus) rigidiusculis plerisque dentatis; involucri squamis 3–4-seriatim imbricatis inæqualibus oblongo-lanceolatis obtusiusculis vix glandulosis; pappo corolla disci tertia parte breviore, e setis circ. 40 valde inæqualibus. — Mexico, *Coulter*, no. 295.

ACHÆTOGERON, *Nov. Gen.*

Capitulum multiflorum, radiatum, heterochromum; fl. radii ligulatis, numerosissimis, pluriseriatis, fœmineis; disci tubulosis hermaphroditis. Involucrum subbiseriale, e squamis æqualibus linearibus dorso villosis. Receptaculum convexum, subalveolatum. Ligulæ circ. 400, elongatæ, lineari-filiformes. Corollæ disci 5-dentatæ. Antheræ cuspidato-apiculatæ. Styli rami breves, cono brevissimo complanato terminati. Achenia (immatura) oblonga, compressa, 4-nervia, parce hirtella. Pappus in disco et radio conformis, simplex, e paleis 5–6 laciniato-denticulatis basi in coronam achenio quadruplo breviorem concretis. — Herba perennis, hispida, facie Erigerontis pumili; caulibus simplicibus monocephalis; ligulis albis, disco flavo.

A. WISLIZENI. — Llanos, in the Sierra Madre, west of Chihuahua, in an open valley, among grass. — Stems 10 inches high, erect or ascending, rough-hirsute, slender, leafy nearly to the summit. Leaves alternate, linear, somewhat 3-nerved; the upper sessile and entire; the lower sparingly incised-toothed, tapering to the base. Head three fourths of an inch in diameter, including the rays, which are 3 or 4 lines long, excessively numerous, and very slender. Pappus nearly equalling the proper tube of the corolla. — The plant is entirely like a true Erigeron (so much so, that, except for the more numerous rays, it might be taken for E. pumilum, *Nutt.*), except as to the pappus, which refers it to the Bellideæ, *DC.*, and is remarkably large and conspicuous for that subdivision. It represents, as it were, the section Phalacroloma deprived of the bristles; in allusion to which character the generic name is contrived.

DIPLOSTELMA, *Nov. Gen.* (non *Raf.*)

Capitulum multiflorum, hemisphæricum, radiatum, heterochromum; fl. radii uniserialibus, fœmineis; disci tubulosis hermaphroditis, omnibus fertilibus. Involucrum pluriseriale; squamis lineari-oblongis, coriaceo-chartaceis, subcarinatis, margine scariosis, apice fimbriato-ciliatis, regulariter imbricatis, appressis, exterioribus sensim brevioribus. Receptaculum planum, nudum. Ligulæ circ. 20, elongatæ. Corollæ disci (plusquam

343. G. (HEMIACHYRIS) SPHÆROCEPHALA (sp. nov.): humilis, diffuso-ramosissima; ramulis divergentibus foliosis capitula solitaria majuscula gerentibus; foliis linearibus uni-

60) e tubo gracili infundibuliformes, limbo 5-lobo. Styli rami complanati, appendice triangulari acutiuscula terminati. Achenia oblonga, compressa, hirtella, radii subtrinervia, disci binervia, nervis marginalibus. Pappus conformis, duplex, e paleis coriaceis 5 oblongis eroso-truncatis achenio brevioribus, et setis capillaribus scabris totidem cum paleis alternantibus corollam subæquantibus, constans. — Herba annua biennisve, pumila, Bellidis-facie, cinereo-hirsuta; caulibus e basi simplicibus monocephalis; foliis obovatis vel spathulatis integerrimis, caulinis parvulis; capitulo majusculo; ligulis albis; disco luteo.

= Distasis modesta fide Jos. R. Greene l. p. 91

D. BELLIOIDES. — Monterey and Buena Vista, *Dr. Gregg*, *Dr. Edwards*, and *Major Eaton*: apparently in dry soil; flowering in March. — Plant 2 or 3 inches high, branched from the base; the stems simple or nearly so, leafy to the top. Radical leaves an inch long, including the tapering base or petiole; the cauline successively smaller, sometimes minute. Involucre one fourth of an inch in diameter, pubescent with fine appressed hairs. Rays linear-oblong, about a fourth of an inch in length, the tube (as also that of the disk corollas) slender. — This genus belongs to the subdivision Bellicæ, *DC.*, where it will stand between Bellium (which it seems to represent in the New World) and Chætopappa. The achenia and pappus are nearly as in Bellis, from which it is distinguished principally by the perfectly flat receptacle, the pluriseriate imbricated involucre, the manifest tube to the corolla, and the leafy stems. From Chætopappa it differs in the many-flowered heads with a hemispherical involucre, the flowers all fertile, in the flattened and 2-nerved achenia, and the large and thickish scales of the pappus. To avoid an increase of synonymy in case the discovery of intermediate forms should invalidate these distinctions, I have taken up for the name of this genus a superseded synonyme of Chætopappa.

DICHÆTOPHORA, *Nov. Gen.*

Capitulum multiflorum, radiatum, heterochromum; fl. radii ligulatis, uniseriatis, fœmineis; disci tubulosis hermaphroditis. Involucrum subuniseriale disco brevius; squamis æqualibus, lineari-lanceolatis, herbaceis, margine subscariosis. Receptaculum ovato-conicum, nudum. Ligulæ 16–20, oblongo-lineares. Corollæ disci 5-dentatæ. Styli rami appendice triangulari-lanceolata complanata terminati. Achenia (lateraliter) plano-compressa, ala suborbiculari cincta, marginibus cum disco pilis glochidatis hispidissima. Pappus radii et disci conformis, e squamellis minimis paucis (8–10) basi coroniformi-subconcretis, et setis tenellis subulatis achenio dimidio brevioribus, constans. — Herba annua, pumila, caulescens, pilosa, Bellidis integrifoliæ facie; caulibus diffusis apice nudo monocephalis; foliis spathulatis integerrimis; ligulis albis roseisve; disco flavo.

D. CAMPESTRIS. — (Brachycome xanthocomoides? *Torr. & Gray, Fl.* II. *p.* 190.) Around Monterey, New Leon, and on the Rio Conchos, Chihuahua (the latter a more slender and less hirsute form), called "Manzanilla del campo," *Dr. Gregg.* — Stems branched from the base, 3 to 6 inches long. Heads like those of Bellis integrifolia, but the disk more conical in fruit: the receptacle longer than the involucre. Achenia half a line long, obovate-orbicular; the wing on each side as broad as the disk, strongly and densely fringed with minutely glochidate bristles: these are longer than the subulate squamellæ of the pappus, which they nearly conceal, but scarcely half the length of the two slender and naked subulate awns. — A comparison with the fragment of the Texan specimen in my possession convinces me that this is the plant which is doubtfully referred to Brachycome xanthocomoides, *Less.*, in the *Flora of North America*; the characters of which

nerviis, caulinis obtusis deorsum attenuatis; involucro hemisphærico vix pedunculato; ligulis 10–12 lineari-oblongis, fl. hermaph. circiter 30; acheniis junioribus turbinatis sericeo-villosis disci et radii pappo conformi donatis, e paleis 5–6 ovatis brevissimis pl. m. coroniformi-concretis. — Low prairie, from the Upper to the Middle Spring of the Cimarron; Aug. (527.) — Plant a span to a foot high, slightly glandular-scabrous, divergently much branched, very leafy. Cauline leaves less than an inch long. Heads about as large as those of Amphiachyris dracunculoides; the rays rather large, and spreading. Receptacle conical, alveolate-dentate. Pappus shorter than the ovary, or than the proper tube of the corolla; that of the rays similar, or very little smaller. — This species, and the nearly allied Hemiachyris glutinosa, *Schauer in Linnæa*, 19. *p.* 724 (or at least a plant of Coulter's Mexican collection which I take to be that species, notwithstanding it presents an evident, though smaller, pappus in the ray), agree with Hemiachyris, *DC.*, in the short and somewhat coroniform pappus, and in the solitary heads; but differ from Texana, *DC.*, in having a pappus also in the ray; and thus confirm the propriety of reducing that genus to a section of Guttierrezia.*

†344. Amphiachyris dracunculoides, *DC.; Torr. & Gray, l. c.* High prairies, near the upper ferry of the Kansas River; Sept. (528.) — Cultivated in the Botanic Garden, this proves to be quite an ornamental plant.

†345. Solidago speciosa, *Nutt.; Torr. & Gray, Fl. 2. p.* 205. With the last. (531.)

346. S. speciosa, *β.* angustata, *Torr. & Gray, l. c.* Mountain-sides, Santa Fé Creek; July. (387.)

†347. S. rigida, *Linn.* Council Grove, &c.; Aug., Sept. (389.)

†348. S. ulmifolia, *Muhl.; Torr. & Gray, l. c. p.* 217. Prairie, south of the upper ferry of the Kansas River; Sept. (530.)

were drawn from a single head of unexpanded flowers, with the setæ of the pappus and the form of the achenium not yet developed. The genus should evidently stand between Boltonia and the Australian genus Brachycome.

* The original Guttierrezia linearifolia, *Lag.*, if truly Mexican, has not been identified. From the imperfect character, I suspect it may be the Brachyris divaricata, *Nutt.*, which sometimes has only three or four rays, and which Lieut. Emory collected in New Mexico. The G. linearifolia, *Hook. & Arn. in Comp. Bot. Mag.* 2. *p.* 51 & *p.* 254, from Chili, does not agree with Lagasca's character, and is very near G. Californica. G. microcephala, the Brachyris microcephala, *DC.*, non *Hook.*, which was gathered at Saltillo by Dr. Gregg, has only one or two rays and as many disk-flowers: the pappus of the ray consists of oblong and distinct paleæ, much shorter than the achenium: that of the disk is formed of similar, although more slender. paleæ; but the achenium appears to be abortive, as in Amphiachyris, thus invalidating the distinction between those two genera.

†349. S. INCANA, *Torr. & Gray, Fl. 2. p. 221* : var. racemis dense corymbosis ; foliis plerisque acutis. — Seven miles east of Rock Creek, a source of the Canadian ; August. (525.)

350. S. INCANA, verging to S. nemoralis, *γ. Torr. & Gray, l. c.* Santa Fé ; July. (387 b.) — A well-marked dwarf state of S. incana, only a span high, with roundish leaves, but less hoary than the plant of Nicollet, was collected on the Upper Arkansas in Fremont's third expedition.

351. S. LANCEOLATA, *Linn.* Council Grove to the ferry of the Kansas. (529.)

†352. LINOSYRIS GRAVEOLENS, *β. Torr. & Gray, Fl. 2. p. 234.* Dry, gravelly hills, Bent's Fort, on the Arkansas ; Sept. (341.) — "Shrub 2 to 4 feet high." — The Linosyris Texana, *Torr. & Gray, l. c.*, was founded on specimens which prove to be masculine individuals of a nearly herbaceous species of Baccharis.*

353. APLOPAPPUS (BLEPHARODON) SPINULOSUS, *DC.* Gravelly or sandy soil, around Santa Fé, Pecos, &c. ; May to Oct. (499.)

†354. A. SPINULOSUS, var. GLABER. Prairie on the Cimarron. (394.) — Dr. Wislizenus gathered the same form on the Arkansas.

†355. A. SPINULOSUS, var. CANESCENS. Between Santa Fé and the Rio del Norte ;

* BACCHARIS TEXANA : glabra ; caulibus plurimis herbaceis e basi suffruticosa rigidis argute striato-angulatis foliosissimis subsimplicibus apice corymboso-oligocephalis ; foliis linearibus mucronulatis vel acutatis basi angustata sessilibus carinato-uninerviis marginibus obsolete repando-denticulatis ; involucri squamis lineari-lanceolatis sensim acutis laxis ; receptaculo nudo alveolato-dentato ; acheniis oblongo-fusiformibus glaberrimis pappo albido involucrum duplo excedente superatis. (Linosyris Texana, *Torr. & Gray, Fl. 2. p. 232.*) — Dry prairies and Post-oak woods, Texas, *Drummond*, *Dr. Riddell*, *Lindheimer*, *Wright* ; Aug. to Nov. — Stems about a foot high, in aspect not unlike Linosyris vulgaris. Leaves an inch or an inch and a half long, one or two lines wide, rigid. The sterile stems or branches bear six or eight about 30-flowered heads in a leafy corymb ; the limb of the corolla is deeply 5-cleft ; the branches of the style terminated by conspicuous lanceolate appendages. The fertile stems bear from two to eight heads ; the corollas slender and truncate ; the soft pappus half an inch long. Achenia several-ribbed. The species appears to be allied to B. thesioides, *H. B. K.*, and B. linifolia, *DC.*

The Polypappus sericeus, *Nutt. in Jour. Acad. Philad. (n. ser.) 1. p. 178*, from Gambell's collection, is undoubtedly the same as a Willow-like silky-cinereous shrub in Fremont's, Coulter's, and, more recently, in Emory's Californian collections, which I had ventured to refer to Tessaria. (T. borealis, *Torr. & Gray, Fl. Suppl. Compos. ined.*) In habit and generic characters it well accords with T. absinthioides, *DC.*, except that the receptacle is not hirsute, but naked. It is certainly excluded from Polypappus, and from the Baccharеæ, by the caudate anthers (although the tails are short) and heterogamous heads, there being several perfect or male flowers in the centre of the disk. Lieut. Emory met with it in the bed of the Rio del Norte, New Mexico, as well as along the Gila. It is enumerated, but not described, in his Report, under the name of Tessaria borealis, *DC.*, the initials of De Candolle having been appended through some mistake.

May. (395.) — Dwarf, more hoary than in the ordinary plant, from which I cannot separate it. It is the same as the A. (Blepharodon) Coulteri, *Harv. & Gray, ined.*, from California. — Other forms, which I cannot distinguish specifically, were gathered around Saltillo by Dr. Gregg.

†356. A. GRACILIS: pilosus, humilis; caulibus e radice bienni ramosis; foliis inferioribus parce pinnatifidis segmentis oblongis obtusis, superioribus integris linearibus subdentatis, dentibus pulchre setigeris; ramis monocephalis; involucri campanulati squamis 3–4-seriatis lineari-lanceolatis setigero-mucronatis pilosulis; ligulis 15–18; receptaculo valde fimbrillifero, fimbrillis setoso-subulatis achenia subcompressa sericea fere æquantibus; pappo e setis valde inæqualibus, intimis rigidis basim versus incrassatis corollam subæquantibus, exterioribus gracilibus sensim dimidio–4-plo brevioribus. — Dieteria (Sideranthus) gracilis, *Nutt. in Jour. Acad. Philad.* (*n. ser.*) 1. *p.* 177. — Along Santa Fé Creek. (393.) — Our specimen is a very incomplete autumnal one; the pappus whitish. An original one of Mr. Gambell's, with which I have compared it, is a plant about 9 inches high, with slender branches; the linear leaves half an inch or less in length; the heads about the size of those of A. spinulosus; and the pappus rufous. It belongs to the section Blepharodon, *DC.;* but the pappus consists of as unequal and coarse bristles as in the true Aplopappi. The characters of a new Texan species of the same section, which has a still more rigid pappus, are subjoined.*

357. PRIONOPSIS CILIATA, *Nutt.; Torr. & Gray, Fl.* 2. *p.* 245. Low prairies on

* APLOPAPPUS AUREUS (sp. nov.): humilis, minute viscoso-glandulosus, primum subarachnoideus; caulibus e radice perenni? adsurgentibus diffusis; ramis ramulisve apice corymbosis monocephalis; foliis anguste linearibus scabrido-glandulosis setigero-mucronatis lobis dentibusve setigeris utrinque 1–4 instructis, summis integerrimis; capitulis nudis; involucri hemisphærici squamis oblongis pluriseriatis appressis apice brevi obtusiusculo herbaceis muticis, intimis scariosis acutis discum subæquantibus; receptaculo alveolato-fimbrillifero; acheniis brevibus turbinatis villosissimis; pappo albo e setis circiter 10 validioribus corollam subæquantibus et 20–30 sensim minoribus, omnibus rigidis. — Low prairies, near Houston, Texas, *Mr. Charles Wright;* Sept., Oct. — Stems or branches 6 or 8 inches high, terminated by a loose corymb of five or six showy heads. Lower leaves about an inch long, scarcely a line wide, the upper almost filiform. Involucre half an inch in diameter; the numerous golden-yellow rays about the same length. — Of still stouter bristles is the pappus of the subjoined rayless species, which should doubtless form a distinct subgenus, viz.: —

§ ACAMPTOPAPPUS: ligulæ nullæ: squamæ invol. hemisphærici pauciserialis oblongæ, obtusissimæ, marginibus sphacelato-scariosæ: pappus achenium et corollam vix adæquans, e setis 20–30 rigidis inæqualibus, majoribus complanatis sursum clavellato-incrassatis, constans.

A. SPHÆROCEPHALUS (*Harv. & Gray, Pl. Coult. ined.*): fruticosa? glabra; foliis caulinis ignotis, ramealibus parvis rigidis linearibus uninerviis sessilibus; capitulis (4–5 lin. diam.) 30–40-floris corymbosis breviter pedunculatis; alveolis receptaculi dentatis; achenio turbinato sericeo-villosissimo. — California, *Coulter.*

the Arkansas; Aug. to Sept. (386.) — This is a very showy plant in cultivation. From Texan seeds sown in the spring, it flowers in the autumn as an annual.

358. GRINDELIA SQUARROSA, *Dunal.* Moist meadows, &c., along Santa Fé Creek; June to Aug. (390.) — The lowest leaves are incisely pinnatifid in some specimens.*

359. HETEROTHECA SCABRA, *β.* NUDA, *Torr. & Gray, Fl. 2. p. 251.* Low prairies on the Cimarron; August. (392.) — H. (Chætactis) Chrysopsidis, *DC.*, described from specimens gathered by Berlandier at Saltillo, has also been copiously collected by Dr. Gregg at the same place. Dr. Gregg's specimens considerably resemble H. scabra, *β.*: some of the ray-flowers bear a deciduous, paucisetose pappus, while others are destitute of pappus.

360. CHRYSOPSIS VILLOSA, *Nutt.* Rocky and sunny hill-sides, valley of Santa Fé Creek; June to Aug. (391.) — The C. villosa, *β.* minor, *Hook. Pl. Geyer, in Lond. Jour. Bot. 6. p. 244,* appears to me to be C. hispida.

†361. C. CANESCENS, *Torr. & Gray, Fl. 2. p. 256,* passing into C. foliosa, *Nutt.* Dry prairies, Santa Fé to the Cimarron; July to Sept. (391 b.) — Numerous specimens from recent collections seem entirely to connect C. canescens, C. foliosa, and C. mollis. The exterior pappus is abundantly manifest in most specimens.

* Of Mr. Bentham's genus Perityle (in *Voy. Sulph. p. 23 & 119. t. 15*), there are the following unpublished species in Coulter's Californian collection; some of which, unlike the original species, have alternate leaves, and therefore agree better with Asteroideæ.

PERITYLE ACMELLA (*Harv. & Gray, Pl. Coult. ined.*): subglabra; caulibus elongatis decumbentibus; ramulis involucrisque minute glandulosis; foliis plerisque alternis ovatis trifidis, superioribus interdum hastato-trilobis; lobis lanceolatis oblongisve acutis; receptaculo plano; ligulis oblongis discum vix superantibus; appendicibus styli oblongo-lanceolatis acutis; pappi aristis 2 scabris tubum corollæ subæquantibus achenio oblongo marginibus valde hispidi-ciliato dimidio brevioribus. — Spilanthes Pseudo-Acmella, *Hook. & Arn. Bot. Beech. p.* 150 ?

P. LEPTOGLOSSA (*Harv. & Gray, l. c.*): suffruticosa? spithamæa, cinereo-puberula; foliis alternis (an semper?) ovatis subcordatis crenato-incisis denticulatis; receptaculo convexo; ligulis linearibus elongatis (cum tubo filiformi $\frac{1}{2}$ unc. longis); appendicibus styli fl. herm. attenuato-filiformibus; pappo uniaristato, arista nuda corolla disci gracillima breviore achenio lineari-oblongo marginibus breviter hispidi-ciliato longiore.

P. PLUMIGERA (*Harv. & Gray, l. c.*): ramosissima, viscido-puberula; foliis (ramealibus) parvis alternis seu oppositis ovatis oblongisve denticulatis; receptaculo convexo; ligulis oblongis involucrum excedentibus; styli ramis fl. hermaph. elongatis in appendicem brevem vix dilatatam obtusam desinentibus; achenio oblongo marginibus villosissimo, pilis squamellis pappi longioribus; arista unica corollam disci æquante achenium plus-duplo superante apicem versus parce plumosa. — This species seems to be nearly related to P. Californica, *Benth.*, which I know only by the published description and figure. The specimens are merely branches, destitute of lower leaves. The heads are only 2 or 3 lines in diameter. The ligules are longer than the tubular portion, and much longer than is represented in the figure of the original species. The dense fringe of the achenium is nearly as broad as its disk; and the slender awn is barbellate-plumose.

†362. C. CANESCENS, var. NANA: caulibus 3–4-pollicaribus; foliis capitulisque parvis minus incanis. — Elevated, rocky region, two miles east of the Mora River; August. (391 c.)

†363. CONYZA SUBDECURRENS, *DC. Prodr.* 5. *p.* 379. Santa Fé, at the foot of mountains high up the creek; July. (378.) — An annual or biennial, with a strict, leafy stem, a foot high. Lower leaves pinnatifid-toothed.*

†364. ECLIPTA ERECTA, *Linn.* Banks of the Missouri, below Liberty. (396.)

†365. SILPHIUM INTEGRIFOLIUM, *Michx.* High prairies, near the upper ferry of the Kansas; Sept. (398.)

†366. S. PERFOLIATUM, *Linn.* On the Kansas; Sept. (399.)

†367. ENGELMANNIA PINNATIFIDA, *Torr. & Gray, Fl.* 2. *p.* 283. Raton Mountains; Sept. (401.) (Also near Buena Vista, *Dr. Gregg.*)

368. BERLANDIERA LYRATA, *Benth. Pl. Hartw. no.* 120. Woodlands, on the mountains, between Pecos and San Miguel; Aug. (420.) (Also on the Cimarron, *Lieut. Abert;* north of Paso, *Dr. Wislizenus;* and near Chihuahua, *Dr. Gregg.*)

†369. MELAMPODIUM CINEREUM, *DC. Prodr.* 5. *p.* 518. (M. leucanthum, *Torr. & Gray, Fl.* 2. *p.* 271.) Santa Fé to San Miguel; Aug. (462.) — The specimen has rather large and mostly sinuate leaves, which are sometimes longer and sometimes shorter than the slender peduncles; as is also the case with plants raised from Texan seeds. It flowers all summer, and is quite ornamental. The root is apparently perennial. Also, no. †397 from high prairies on Big Sand Creek (Cimarron), a form with narrow and entire leaves; the M. leucanthum, *Torr. & Gray, l. c.*, but certainly not distinct from M. cinereum of De Candolle. A still more slender-leaved form was gathered at Paso del Norte by Dr. Wislizenus, and intermediate states by him on the Cimarron and by Fremont on the Upper Arkansas.

†370. IVA CILIATA, *Willd.* From Sand Creek, New Mexico, to Fort Leavenworth, in low prairies; Sept. (413.)

†371. CYCLACHÆNA XANTHIIFOLIA, *Fresen. Ind. Sem. Hort. Franc.* 1836; *Torr. & Gray, Fl.* 2. *p.* 285. Bottom land, Santa Fé to Rock Creek, New Mexico; Aug. — Plant from 6 to 10 feet high. There are two forms (415 and 416), one with rounder and cordate, more incisely toothed leaves, the other with all the upper leaves lanceolate-ovate and somewhat cuneate at the base. The plant from Oregon, communicated by Mr. Spalding, appears to be intermediate between the two.

* The Conyza sinuata, *Ell. Sk.* 2. *p.* 378, is C. ambigua, *DC.*; as appears from specimens which I have received from Mr. Ravenel.

372. AMBROSIA CORONOPIFOLIA, *Torr. & Gray, Fl. 2. p.* 291. Santa Fé to Council Grove; Aug., Sept. (402.)

†373. A. LONGISTYLIS, *Nutt.?* Low places, Santa Fé Creek; July, Aug. (405.) "Branches mostly decumbent, more than three feet long." Leaves all bipinnatifid. Plant just coming into flower; the fertile flowers not yet apparent. Perhaps a Franseria.

†374. A. LONGISTYLIS, *Nutt.?* var. With the last; a stouter and more hispid form; the fertile flowers undeveloped. (407.) — Except that the leaves are more compound, it is not unlike the Mexican plant referred by De Candolle to A. Peruviana, *Willd.*

†375. A. APTERA, *DC. Prodr. 5. p. 527.* Bottom land, Council Grove to Walnut Creek. (414.) — The upper petioles are slightly margined; but the fruit is 4 – 6-tuberculate rather than spinose.

375, bis. FRANSERIA HOOKERIANA, *Nutt.; Torr. & Gray, Fl. 2. p.* 292. (Ambrosia acanthicarpa, *Hook.*) Santa Fé, near the creek; Oct. (409.) — The fertile involucre is one-celled.*

* The spines, which are flattened and somewhat scale-like in this and some other species of Franseria, are represented by broad scarious wings in the following singular genus: —

HYMENOCLEA, *Torr. & Gray, Fl. ined., & in Emor. Report, p.* 143 (*absq. char.*).

Capitula monoica homogama, secus rachin persistentem glomerato-spicata. *Mas.* Involucrum Franseriæ, 5 – 6-lobum, 15 – 20-florum. Receptaculum parvum, paleis scariosis unguiculatis obovato-dilatatis onustum. Corolla cyathiformis 5-dentata. Antheræ conniventes vix connatæ, appendicula deltoidea inflexa superatæ. Ovarium vix ullum: stylus apice radiato-penicillatus. *Fœm.* Involucrum fructiferum obovoideum seu fusiformi-clavatum, coriaceum, clausum, uniloculare, uniflorum, apice in rostrum tubuliforme superne scariosum pervium desinens, extus squamis 9 – 12 magnis rotundatis scariosis persistentibus, aut spiraliter imbricatis aut univerticillatis, insigniter alatum! Corolla subnulla. Stamina nulla. Achenium ovoideum loculum implens. Semen et embryo ordinis. — Frutices Neo-Mexicani et Californici, in aridis salinis vigentes, ramosissimi, glabrati, foliosi; ramis subspinescentibus; foliis alternis, filiformibus, subtus tenuiter incanis, inferioribus pinnato-3 – 5-partitis, summis integerrimis.

1. H. SALSOLA (*Torr. & Gray, l. c.*): involucro fructifero strobiliformi angulato squamas a basi ad apicem spiraliter dispositas rotundato-reniformes basi tuberculiformi-incrassatas undique gerente. — Sandy, saline uplands near the Mohave River, in the interior desert of California, *Fremont.* — Heads spicate on short, rigid, and persistent spurs of an inch or two in length. Fructiferous involucres crowded, nearly half an inch long, covered with the broad and wing-like silvery scales, each about 4 lines wide, which are imbricated, as in a bud, and conceal the nut-like involucre from which they arise, presenting the appearance of a scaly strobile, or when moist widely spreading. This singular plant has the aspect of a Chenopodiacea rather than of a Composita, although it presents wholly the structure of Ambrosia or Franseria.

2. H. MONOGYRA (*Torr. & Gray, l. c.*): involucro turbinato-fusiformi exangulato inferne nudo versus

†376. F. HOOKERIANA, var. foliis magis strigosis subincanis. (F. montana, *Nutt.! l. c.*) Sandy bed of Dry Creek, east of Bent's Fort; Sept. (408.)

†377. F. DISCOLOR, *Nutt. l. c.* Between the Rio Colorado and Rock Creek, New Mexico; Aug. (411.) — Also gathered by Fremont on the Platte in the Wind River chain of the Rocky Mountains. The fertile involucres are armed with a few strong, subulate spines, one-celled, or two-celled at the base.

†378. F. TENUIFOLIA (*Harv. & Gray, Pl. Coult. ined.*): caule erecto hispido; ramis diffusis gracilibus; foliis bipinnatisectis strigoso-hirsutis subcinereis, pinnis segmentisque 3–7 linearibus integris seu 1–2-dentatis cum lobulis paucis secus rachin angustam parce hispidam hinc inde interpositis, lobo terminali prælongo; racemis spiciformibus gracilibus in paniculam foliosam digestis; involucris masculis pedicellum æquantibus 7–8-dentatis 6–12-floris, fœmineis inferne glomeratis aculeis paucis brevissimis uncinatis armatis intus bilocellatis bifloris. — Poñi Creek, between Bent's Fort and Santa Fé; also at Santa Fé; July to Oct. (406.) — This appears to be the same as a plant in Coulter's Californian collection; and perhaps is too closely related to F. hispida, *Benth. in Bot. Voy. Sulph. p.* 25; but the lobes of the leaves are not "dentibus obtusiusculis brevibus crispis," but entire or nearly so; the sterile involucres are merely toothed, and the fructiferous involucres examined are only two-celled.

†379. F. TOMENTOSA (sp. nov.): herbacea, pube sericeo molli undique argenteo-incana; caule erecto (pedali) paniculato; foliis pinnato-3–5-partitis subtus præsertim dealbatis in petiolum brevem angusto-marginatum lobulis dentiformibus hinc inde appendiculatum decurrentibus, infimis videtur bipinnatifidis, lobis superiorum et ramealium oblongis lanceolatisve dentatis seu integerrimis, nisi terminali maximo trilobo; involucris masculis in racemum densum digestis 6-dentatis 18–20-floris fœmineis in axillis supremis glomeratis ovoideis viscoso-puberulis aculeis subulatis validis apice subuncinatis obsitis atque 2 crassioribus rostratis intus bilocellatis bifloris. (Ambrosia tomentosa, *Nutt. Gen.* 2. *p.* 186 ?) — High banks of Walnut Creek, between Council Grove and Fort Mann, of the Arkansas; Sept. (412.) — Root perennial. Stem stout, bearing numerous paniculate branches. Leaves silvery-tomentose and very white underneath, the upper surface whitened with a less dense and somewhat deciduous pubescence; the terminal lobe from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches in length and half an inch to an inch in width. Sterile involucre 3 lines in diameter; the fertile (immature) larger, thickly beset with short and stout

apicem squamas dilatato-obovatas basi vix crassiores in verticillum congestas gerente. — Along the valley of the Gila, *Lieut. Emory.* Also at "Ojito," New Mexico? *Dr. Gregg.* Shrub 4 or 5 feet high, with much the aspect of a Wormwood; the filiform leaves about two inches long. Fertile involucres only one fourth the size of those of the foregoing species. I have not examined the sterile heads.

spines, with two terminal and thicker, but scarcely longer ones, forming beaks, much as in Xanthium. — The vestiges of the lower cauline leaves in the specimen show that these are more or less bipinnately parted, so that the plant is likely to be the Ambrosia tomentosa of Nuttall's *Genera*, — which is known only by the incomplete character given in that work, and which has not since been recognized.

† 380. XANTHIUM ECHINATUM, *Murr.*, var. fructibus minoribus. Waste fields, Santa Fé; August. (482.)

381. ZINNIA GRANDIFLORA, *Nutt. in Trans. Amer. Phil. Soc. (n. ser.)* 7. *p.* 348; *Torr. & Gray, Fl.* 2. *p.* 298. Dry, gravelly hill-sides, Santa Fé; June to October. Also on Rayado Creek. (400.) — A dwarf, suffrutescent, eminently showy species, bearing an abundance of flowers through the whole season; the rounded, light-yellow rays two thirds of an inch in length, around a narrow, orange-colored disk. Some of the achenia bear a short fimbrate-laciniate awn, and a bristle or two in place of the second: others bear a little tuft of a few bristly hairs in place of the awns. The chaff is petaloid and orange-colored at the tip.*

† 382. HELIOPSIS LÆVIS, *Linn.* Mora River, New Mexico; August. (430.)

† 383. H. LÆVIS, *β.* GRACILIS, *Torr. & Gray, Fl.* 2. *p.* 303. Council Grove; August.† (433.)

* Dr. Torrey has re-described and figured it in Emory's Report (plate 4). The following is a very dwarf, apparently undescribed species of the same habit, from Dr. Gregg's collection: —

ZINNIA PUMILA (sp. nov.): cæspitosa e caudice suffruticoso, depressa; caulibus 2–4-uncialibus ramosis conferte foliosis, hirsutis; foliis anguste linearibus uninerviis impresso-punctatis margine cartilagineis scabris basi connatis internodiis multo longioribus nunc fere imbricatis; capitulis parvis brevissime pedunculatis; involucri squamis rotundatis; ligulis ovalibus luteis; paleis receptaculi obtusissimis apice suberosis; acheniis disci uniaristatis aut subbiaristatis margine cum basi aristæ ciliatis. — High plain near San Juan de la Vequeria, and at Castaniola, in Northern Mexico, *Dr. Gregg.* — More dwarf and condensed than Z. grandiflora; the leaves half an inch long. Head three tenths of an inch in length; the pale-yellow rays about as long as the involucre, perhaps not persistent.

† Specimens of Heliopsis lævis, *γ.* scabra, *Torr. & Gray*, from Arkansas and farther westward, often show the rays persistent until the achenia are mature, and have an obscure coroniform pappus, much more marked than in the Eastern plant. In Mr. Spalding's Oregon collection occurs an undescribed Heliopsideous plant, which has the same relation to Balsamorrhiza that Kallias, *Cass.*, has to Heliopsis proper: —

BALSAMORRHIZA § KALLIACTIS. Ligulæ marcescenti-persistentes. Achenia pubescentia. — Caulis bi–pluriflorus, parce foliatus; foliis integerrimis.

B. CAREYANA (sp. nov.): cinereo-puberula, subscabra; caule erecto apice subvilloso 2–8-cephalo; foliis longe petiolatis adultis scabris reticulato-venosis, radicalibus cordato-hastatis repandis, caulinis 3–7 parvulis lanceolatis subtrinervatis sparsis imisve oppositis; involucri squamis biseriatis lanceolatis appressis villosulis æquilongis discum æquantibus; ligulis circiter 12 ovalibus emarginatis multinerviis inferne puberulis discum

384. RUDBECKIA LACINIATA, *Linn.* Along Santa Fé Creek; July. (417.)

†385. R. SUBTOMENTOSA, *Pursh; Torr. & Gray, Fl. 2. p.* 309. Near Fort Leavenworth. (419.)

ter superantibus demum papyraceis cum achenio delapsis vel tardissime articulo secedentibus; receptaculo convexo; acheniis tetraquetris apicem versus pubescentioribus prismaticis, radii modice obcompressis. — Sandy plains, Clear Water, on the Kooskooskee, Oregon, *Rev. Mr. Spalding;* flowering in May. — Root apparently thick, as in the genuine species of Balsamorrhiza. Stem from 6 to 14 inches high. Radical leaves 3 or 4, or when mature 6, inches long; the cauline 2 or 3; the petiole as long as the blade. Lateral heads on slender peduncles. Involucre half or three fourths of an inch in diameter. Rays nearly an inch long, when old apparently light yellow, raised on a short tube, the base of which is articulated with the very obtuse summit of the achenium, but is persistent until the fruit is fully ripe. Disk-corolla, style, &c., as in Balsamorrhiza. — This interesting species is dedicated to my friend Mr. John Carey, who pointed out to me its characters and affinities. Mr. Spalding's collection likewise contains the following genuine species of this characteristic Oregon genus, viz.: —

B. SAGITTATA, *Nutt.* Called by the natives "*Pash.* The tender stalks, the root, and the seeds, used for food." This circumstance, the habitat, and the involucre, the exterior scales of which are longer than the others and exceed the disk, render it sure that this plant is the Buphthalmum sagittatum of Pursh; but an imperfect authentic specimen of Bals. helianthoides, *Nutt.*, does not show any marked difference. The heads in Mr. Spalding's specimens are fully four inches broad, including the extended rays. The small cauline leaves are alternate.

B. INCANA, *Nutt.* Called "*Isilil.* The root, like *Kayum*, exudes a resinous juice: used for food when peeled and baked." Some of the leaves are pinnately parted; others only incised.

B. TEREBINTHACEA (*Hook.*): scabro-pubescens, foliis radicalibus ovato-lanceolatis oblongisve basi truncatis vel obtusis sinuato-pinnatifidis seu integris dentatis, caulinis 2 oppositis juxta basin scapi (5 – 12 unc. longi) monocephali lanceolatis sæpe pectinato-incisis; involucro hirsuti-tomentoso pluriseriali, squamis lanceolatis attenuatis disco sublongioribus. — Heliopsis? (Balsamorrhiza) terebinthacea, *Hook. Fl. Bor.-Am.* 1. *p.* 310. —"*Kayum.* High, hard land. The bark of the root gives a turpentine, like that of pine in taste and smell. Root peeled and baked for food." — This is certainly distinct from B. Hookeri, β. *Torr. & Gray, Fl. l. c.*, to which the synonyme was doubtfully referred; and is more like B. hirsuta, *Nutt.*, but has larger and more woolly heads, and more attenuated involucral scales, as well as undivided or slightly pinnatifid leaves. The foliage, however, is extremely variable in this genus. The form which, among Mr. Spalding's specimens, best accords with Hooker's brief character, has almost undivided leaves, which are beset with very sharp and strong salient teeth. A larger variety has the radical leaves a foot long, including the petiole, and barely crenate-serrate. Involucre fully an inch in diameter. Receptacle convex. The root very thick and long.

WYETHIA HELENIOIDES, viz. the Alarçonia helenioides, *DC.*, a species totally distinct from W. robusta or any other in the *Flora of N. America*, and with the fruitful head three inches in diameter, occurs in the Californian collection made by Fremont in 1846. The achenia, with the calyciform pappus, is over half an inch long. The older leaves (the radical even four inches wide) are glabrous; but those of the same species in Hartweg's collection, gathered in an earlier state, are floccose-tomentose. (I suspect that the W. ovata, briefly characterized by Dr. Torrey in Emory's Report, will prove to be the same species.)

The plant described under the name of Tetragonotheca Texana, *Gray & Engelm. in Proceed. Amer. Acad.*

386. LEPACHYS COLUMNARIS, *Torr. & Gray, Fl. 2. p.* 315. Between Santa Fé and Pecos; Aug. (423.)

387. L. COLUMNARIS, *β.* PULCHERRIMA, *Torr. & Gray, l. c.* Valley west of Pecos; August. (422.)

388. L. COLUMNARIS, *β.* PULCHERRIMA; the dwarf form, with very narrow divisions to the leaves, much branched stems, short peduncles, oval or barely oblong disk, and small rays. (Rudbeckia Tagetes, *James!* R. globosa, *Nutt.!*) — Waste fields, &c., Santa Fé: prairies, Ojo de Bernal and Poñi Creek; July to Oct. (424.)

389. HELIANTHUS LENTICULARIS, *Dougl. in Bot. Reg. t.* 1265. Waste places along Santa Fé Creek; June, July. (428.)

† 390. H. PETIOLARIS, *Nutt.* On the Cimarron; Aug. (429.)

† 391. H. ORGYALIS, *DC. Prodr. 5. p.* 587 (excl. syn.). Low prairie, Hickory Point, Western Missouri; Aug. (434); the heads scarcely formed. Well distinguished by the slender leaves and attenuated long-awned scales of the involucre.*

† 392. H. RIGIDUS, *Desf.; Torr. & Gray, Fl. 2. p.* 322. Santa Fé; July. (426.)

† 393. H. MOLLIS, *Lam.; Torr. & Gray, l. c.* Near 110 Creek; Aug. (425.)

† 394. H. MAXIMILIANI, *Schrad., β.* ASPERRIMUS, *Engelm. & Gray, Pl. Lindh. no.* 261. Bottom land, south side of the ford of the Arkansas; Sept. (427.)

1. *p.* 48, proves, from specimens with good fruit raised in the Cambridge Botanic Garden from seeds communicated by Lindheimer, to have a squamellate pappus, and therefore to be a second species of Halea. The two species are thus characterized: —

1. HALEA LUDOVICIANA (*Torr. & Gray*): foliis amplis ovatis crebre et argutissime dentatis, superioribus late connatis; tubo corollæ glabro; pappo e paleis ovalibus coriaceis circ. 20 latitudine achenii paulo brevioribus.

2. H. TEXANA: gracilis; foliis oblongis vel lanceolatis sinuato-pinnatifidis; tubo corollæ glanduloso; pappo e squamellis subulatis exiguis inæqualibus, majoribus vix dimidium latitudinis achenii æquantibus. — Dr. Gregg also gathered this species at Mier, on the right bank of the Rio Grande.

* Dr. Thomas C. Porter, of Pennsylvania, has furnished me with specimens of an ambiguous Helianthoid plant, gathered by himself on Rock Mountain, Georgia, which I am unable positively to determine for want of the fruit, but which I incline to refer to Rudbeckia, next to R. triloba, notwithstanding that the lower leaves are opposite and the disk-flowers are yellow. It may be provisionally characterized as follows: —

RUDBECKIA? PORTERI (sp. nov.): caule gracili hirsutulo apice paniculato; foliis membranaceis lanceolatis integerrimis utrinque acutis basi attenuata subsessilibus indistincte triplinerviis parce hispidis, superioribus alternis inferne setigero-ciliatis, inferioribus oppositis; pedunculis gracilibus 1 – 2-bracteatis monocephalis; squamis involucri biserialis exterioribus anguste linearibus foliaceis acutissimis laxis hispido-ciliatis disco longioribus, intimis paucis multo brevioribus oblongi-ovatis membranaceis glabris in cuspidem acuminatis paleis receptaculi conici consimilibus; ligulis aureis 7 – 9 obovati-oblongis involucrum duplo superantibus; corollis disci flavis profunde 5-lobis glabris; styli appendicibus filiformi-subulatis hispidis; ovariis calvis compressis marginibus parce hispidulis. — Capitula iisdem R. trilobæ minora.

†395. H. TRACHELIIFOLIUS, *Willd.*; *Torr. & Gray, l. c.* Creek bottom, 30 miles east of Council Grove; Aug.* (431.)

†396. HELIOMERIS MULTIFLORA, *Nutt. in Jour. Acad. Philad.* (*n. ser.*) 1. *p.* 171. Bottom land, seven miles east of Rock Creek, New Mexico; Aug. (432.) — The plant, which much resembles a Helianthus of the Microcephali group, or H. Nuttallii, is just in flower, and has no full-grown fruit. There is no trace of a pappus. — The same species was gathered by Dr. Wislizenus at Llanos, in the Sierra Madre, and a variety, or second species, occurs in the collection made by Fremont in his third expedition.† (This is probably the plant enumerated as Wulfia? in Dr. Torrey's appendix to Emory's Report.)

* Dr. Gregg's collection contains the well-marked H. ciliaris, *DC.*, gathered from near Berlandier's habitat, and an undescribed species, belonging apparently to the *Atrorubentes*, viz.: —

HELIANTHUS LACINIATUS (sp. nov.): caule erecto 2-pedali subglabro; ramis apice pubescentibus foliosis 1–3-cephalis; foliis plerisque alternis scabrido-pubescentibus ovato-lanceolatis vel oblongis triplinerviis laciniato-incisis dentatisve, superioribus basi lata sessilibus, inferioribus in petiolum marginatum attenuatis; involucri squamis ovato-lanceolatis acutis inappendiculatis dense ciliatis discum fuscum subæquantibus; ligulis circ. 20 brevibus; paleis receptaculi apice deltoideo pubescentibus; acheniis glabris biaristatis. — Valley of Nazas, Bolson de Mapimi, and west of San Lorenzo, Coahuila, *Dr. Gregg;* May. — Leaves 2 or 3 inches long; the middle cauline especially bearing two or three lanceolate lobes on each side (a quarter or half an inch long), the others with as many coarse teeth. Heads two thirds of an inch in diameter.

† To the same genus, which, as Mr. Nuttall remarks, is distinguished from Helianthus chiefly by the total absence of a pappus, I am obliged to refer a low, shrubby plant of Dr. Gregg's collection, viz.: —

HELIOMERIS TENUIFOLIA (sp. nov.): caule gracili 2–3-pedali frutescente ramosissimo diffuso foliosissimo; ramulis adscendentibus apice nudo pedunculiformi monocephalis; foliis alternis vel suboppositis supra glabratis subtus incanis tripartitis vel 1–2-pedato-partitis segmentis lobisque anguste linearibus margine revolutis, summis sæpe integerrimis; involucri hemisphærici squamis numerosis imbricatis e basi lanceolata lineari-appendiculatis canescentibus ligulis circ. 15 dimidio brevioribus; corollis disci flavis paleas naviculares obtusas superantibus; receptaculo subconico; acheniis cuneato-oblongis compresso-quadrangulatis glaberrimis calvis. — Dry valleys, at Rinconada, Saltillo, Mapimi, and Andabazo, Northern Mexico, *Dr. Gregg;* May, June. — Called "*Monacillo.*" Leaves crowded, usually fascicled in the axils, from one to two inches in length, cleft into three entire divisions, the middle one prolonged, or each division again 2–5-parted; the lobes and rachis only half a line wide. Involucre half an inch in diameter; the exterior scales longest, rather shorter than the convex disk. Rays neutral. Corolla of the disk-flowers 5-nerved; the tube more than half the length of the throat, puberulent, dilated at the base, where it fits over the apex of the achenium; the lobes short, nearly smooth. Appendages of the style oblong, tipped with a minutely hispid cone. — Some specimens are less hoary than others, but there seems to be no farther difference.

Dr. Gregg also collected Simsia auriculata, *DC.?* Likewise a second species, the achenia of which are almost awnless, viz.: —

SIMSIA SUBARISTATA (sp. nov.): humilis, strigoso-hispida; caulibus ramisve adscendentibus apice nudo pedunculiformi monocephalis; foliis hispido-incanis triangulari-ovatis serratis, superioribus hastato-trilobatis,

cardaminefolia DC. ex H.L.K. II p. 129

397. COREOPSIS ~~TINCTORIA, *Nutt.*~~ East of Mora River, in low places; Aug. (441); and (442) between Coon Creek and Pawnee Fork, in shallow hollows in the

summis alternis, petiolo immarginato basi auriculato; involucri cano-villosi squamis æquilongis; ligulis 8 – 10 brevibus; acheniis glabris marginibus superne ciliolatis apice emarginata aristellis 1 vel 2 minimis donatis vel abortu vix bidentatis! — Bishop's Hill, near Monterey, *Dr. Gregg;* flowering in February. — The specimens, probably depauperate, are only a span high. The awns at most are not longer than half the breadth of the achenium, or the proper tube of the corolla; one of them is almost always abortive, and often both are reduced to a mere vestige. This species, therefore, invalidates the character of the genus Barrattia, *Gray & Engelm.*, which well accords with Simsia in habit; and which, although the absence of pappus would refer it to a different Candollean division of Heliantheæ, I fear cannot be maintained as a separate genus, after the discovery of the present species. At most, it differs from Simsia only as Coreopsis involucrata does from C. aristosa, and Actinomeris (Achæta) pauciflora from genuine Actinomeris. — The genus Geræa, *Torr. & Gray* (*Proceed. Amer. Acad.* 1. *p.* 48), must also be reduced to a section of Simsia.

S. (GERÆA; achenia, et aristæ palæoliformes inferne, villosissima) CANESCENS: caule basi foliato simplici superne longe nudo 1 – 3-cephalo; foliis incano-hirsutissimis alternis vel imis subrosulatis obovatis rhombeisve sæpius integerrimis basi trinervatis subsessilibus, summis ad bracteas parvas reductis, involucri triserialis squamis villosissimis; ligulis maximis cuneato-obovatis apice subtrilobis tubo piloso gracili discum æquante stipitatis; acheniis oblongo-cuneiformibus pilis argenteis præsertim ad margines longissimis villosissimis; aristis lineari-subulatis corollam subæquantibus. — Interior of California, *Fremont, Coulter.*

From Texas Mr. Wright sends an Actinomeris with nearly awnless achenia, but which has not decurrent leaves as in Nuttall's A. (Achæta) pauciflora, and connects that anomalous species with the section Apteron.

ACTINOMERIS WRIGHTII (sp. nov.): caulibus gracilibus undique foliosis apice subcorymbosis; ramis paucis superne nudiusculis monocephalis; foliis oppositis summisve alternis ovatis grosse serratis triplinerviis crassis utrinque scaberrimis basi cuneatis vel abrupte angustatis sessilibus haud decurrentibus plerisque internodiis duplo longioribus; involucri hemisphærici squamis ovalibus obtusissimis 3 – 4-seriatim imbricatis disco fructifero convexo brevioribus; receptaculo convexo; ligulis 9 – 12 elongatis; acheniis oblongis lato-alatis apice emarginato nudis, aristis rudimentariis dentiformibus alæ adnatis. — Mountains near Austin, Texas; Sept. *Mr. Wright.* — Stems many from the same root, two or three feet high. Leaves from 2 to 4 inches long; those of the short flowering branches small, obtuse and alternate. Heads larger than in A. helianthoides. Rays golden-yellow, an inch long. Achenia 4 lines in length.

Among the novelties gathered in the mountains about Cosiquiriachi by Dr. Wislizenus, a striking Helianthoid plant occurs, which I refer to Tithonia, viz.: —

TITHONIA DECURRENS (sp. nov.): pube molli subdecidua undique cano-villosa; caule robusto ad apicem usque foliosissimo; foliis ovato-lanceolatis acutis subintegerrimis penninerviis basi decurrentibus supra demum glabratis scabris; pedunculo cylindrico capitulo subgloboso breviore; involucri biserialis squamis ovato-oblongis appressis apice brevi foliaceo patentibus discum vix æquantibus; paleis receptaculi convexi rigidis apice truncato bimucronatis; acheniis disci sericeis 2-aristatis; aristis subulatis squamellisque crassis persistentibus. — On the Bufa; common on the mountains around Cosiquiriachi, in the State of Chihuahua, *Dr. Wislizenus;* Oct., in fruit. — Herb 2 or 3 feet high, stout. Leaves 4 to 8 inches long, sessile and strongly decurrent, not triplinerved, but the primary veins confluent into an intramarginal vein, hoary beneath with a villous, above with a short and soft, pubescence, which is readily detached by rubbing. Heads termi-

prairies, said to have been made by the buffaloes in wallowing. — The rays are brown only at the base.

†398. C. INVOLUCRATA, *Nutt. in Trans. Am. Phil. Soc. (n. ser.)* 7. *p.* 360. Hollows in the prairies near 110 Creek; Sept. (444). — The achenia are obovate, repand-truncate at the apex, scarcely 2-toothed, entirely awnless; the margins hispid.

†399. COSMOS BIPINNATUS, *Cav. Ic.* 1. *p.* 9. *t.* 14. Woodland, ten miles west of Las Vegas; Aug. (447.) — Rays smaller than in Mexican specimens; the achenia only two-awned. (No. 448 is an autumnal specimen of the same, in fruit; from Santa Fé.)

400. COSMIDIUM GRACILE, *Torr. & Gray, Fl.* 2. *p.* 350. Santa Fé, at the foot of irrigating ditches; and on the Rio del Norte; May to Sept. (445.) (Also gathered by Fremont on the Upper Platte and Arkansas, and by Wislizenus on the Arkansas, and again at Albuquerque.) — The specimens are all rayless, like that of Dr. James. The corolla is yellow, but turns brownish in fading. The mature achenia are narrowly linear, straight or nearly so, 4 lines long, more or less tuberculate; their base cohering with that of the chaff, with which they fall away; the abrupt apex bearing two short and diverging retrorsely barbed *persistent* awns. — There is a third species, with simple leaves, in Dr. Gregg's collection.*

401. BIDENS TENUISECTA (sp. nov.): annua, glabriuscula, caule ramoso tereti adscendente; ramis striato-angulatis apice nudo 1–3-cephalis; foliis (oppositis alternisve) bipinnati partitis vel biternatisectis, segmentis linearibus integerrimis seu 2–3-lobatis rachi paulo latioribus; squamis involucri hirsuti linearibus; ligulis 5–8 inconspicuis discum vix æquantibus; acheniis attenuato-linearibus glabris subtetragonis striatis breviter 2-aristatis. — Margins of Poñi Creek (between Bent's Fort and Santa Fé); Oct. (449.) — Plant one or two feet high, with a very smooth stem. Segments of the leaves seldom over a line in width, and, except the lowest, little wider than their rachis. Heads rather larger than those of B. bipinnata, and with a greater number of disk-flowers. The naked peduncles in the wild specimens are 5 or 6 inches long, bearing a single head; in nating the stem or the few short branches, on thick peduncles of only half an inch in length. Involucre an inch in diameter. Sterile ray-achenia nearly smooth, with a short pappus: fertile achenia 3 lines long; the stout awns about the same length, three or four times the length of the rigid lacerate-denticulate squamellæ. Although different in aspect from the described species, it agrees in floral characters with Tithonia.

* COSMIDIUM SIMPLICIFOLIUM (sp. nov.): caulibus e radice perenni simplicibus 1–3-cephalis; foliis rigidiusculis filiformi-linearibus integerrimis; squamis involucri exterioris ovatis parvis, interioris ad medium connatis ligulis obovato-cuneatis apice trilobis multo brevioribus; acheniis valde immaturis dentibus 2 squamæformibus retrorsum hispidis coronatis (maturis ignotis). — High and dry land, battle-field near Buena Vista, Coahuila, *Dr. Gregg;* May. — Leaves two inches long; the radical ones slightly dilated upwards. Ligules half an inch long.

the plant raised from seed in the Cambridge Botanic Garden the flowering branches are more leafy, and bear three or four heads on shorter peduncles. Achenia half an inch long. The species should stand next to B. bipinnata.

†402. B. FRONDOSA, *Linn.* Ford of the Arkansas, &c.; Sept. (443.)

†402 bis. B. CONNATA, *Muhl.* Low plains near Council Grove; Sept. (439, 435.)

403. XIMINESIA ENCELIOIDES, *Cav.*, δ. CANA, *DC.* Waste grounds, about Santa Fé; May to Sept. (421.) Also in the Raton Mountains, along the Rio de los Animos. — Wings of the achenia opaque and thickened. The plant raised from these seeds in the Botanic Garden, Cambridge, is much less canescent.

†404. SANVITALIA ABERTI (sp. nov.): caule erectiusculo ramoso; foliis lanceolatis trinervatis hispido-scabris in petiolum attenuatis; capitulis primariis pedunculatis nudis; involucro disco (viridi-flavo) fructifero brevioribus; ligulis ovatis longitudine achenii aristas duplo excedentibus; acheniis disci fere conformibus compresso-quadrangulatis tuberculatis exalatis paucisve suberoso-subalatis apice emarginatis calvis aut minime uniaristulatis. — Woodlands, between Santa Fé and Pecos; Aug. (538.) — The specimens have barely produced the primary heads (which are much smaller than in S. procumbens). The fruit, &c., is here described from a mature specimen in Dr. Torrey's herbarium, gathered by Lieut. Abert, between Bent's Fort and Santa Fé. The plant is a span high, and bears all its terminal heads on naked peduncles half an inch long; and the disk is greenish-yellow, not purple nor blackish. Ligules a little more than a line long.*

405. HETEROSPERMUM TAGETINUM (sp. nov.): caule bifariam hirsutulo; foliis pinnato-3–7-partitis more Tagetis pellucido-glandulosis, segmentis linearibus integerrimis; squamis involucri exterioris 3 linearibus capitulum superantibus; acheniis radii ala angusta crassa arcte inflexa cinctis, disci exterioribus calvis centralibus rostratis biaristatis. — Woodlands, twelve miles west of Las Vegas, New Mexico; Aug. (534.) — Annual, a foot high; the foliage, involucre, &c., much as in H. pinnatum; but the segments of the leaves are entire, and pellucid-punctate with abundance of coarse glands, as in Tagetes, those near the margins oblong, the others mostly globular and smaller. The awnless achenia are obovate and very glabrous; the three or four central are flat, and taper into an upwardly hispid-scabrous beak, which bears a pair of retrorsely aculeolate, deciduous awns. In H. pinnatum, the original species of the genus (which in these respects is not well characterized by De Candolle), all the disk-achenia are 2-awned and more or less

* Oligogyne Tampicana, *DC.*, occurs abundantly in the collections made by Dr. Gregg and others in Tamaulipas, at Monterey, &c. Only some of the terminal heads are long-pedunculate: the later ones are frequently almost sessile.

scabrous-hispid; the outermost obovate and obtuse; the next series somewhat produced at the apex; and the innermost linear and elongated into a rough beak.

406. Flaveria angustifolia, *Pers.; DC.! Prodr.* 5. *p.* 635. Low prairie, Middle Spring of the Cimarron; Aug.* (536.)

†407. Dysodia chrysanthemoides, *Lagasca; Torr. & Gray, Fl.* 2. *p.* 362. Santa Fé Creek; June. (526.) — D. tagetoides, *Torr. & Gray, l. c.*, with an allied new Texan species (both of which exhale a pleasant, somewhat anisate odor when bruised) I incline to append to Hymenatherum, notwithstanding some difference in habit. After separating also the doubtful section Aciphyllæa, the genus Dysodia will be left much more homogeneous; the paleæ of the pappus in all pinnato-pilosus v. plumosus. The result of the study of some interesting North Mexican materials is subjoined.†

* Besides F. Contrayerba, two undescribed species occur in North Mexican collections, viz.: —

Flaveria longifolia (sp. nov.): erecta, stricta; foliis carnosis angusto-linearibus prælongis sursum attenuatis acutissimis sæpe falcatis uninerviis spinuloso-denticulatis, superioribus basi lata connato-sessilibus, inferioribus inferne angustatis; corymbo terminali nudo densiusculo; capitulis discoideis 12–15-floris. — Near Cienega Grande, Coahuila, *Dr. Gregg;* May. — The specimens, a foot long, do not show the base of the strict stem. Cauline leaves 4 or 5 inches long, about 2 lines wide near the base, tapering to the apex, nearly all of them denticulate with from 3 to 6 salient mucroniform teeth on each margin. Heads nearly 2 lines long, in a strict and naked compound corymb.

F. chlorælolia (sp. nov.): glauca; caule humili (6–10-pollicari) e radice perenni? adsurgentibus simplicibus corymbo nudo simplici fastigiato terminatis; foliis oblongis connato-perfoliatis integerrimis uninerviis subacutis; capitulis circ. 12-floris discoideis. — Pelayo, northwest of Mapimi, in the State of Chihuahua, *Dr. Wislizenus;* May. And winter vestiges of what is doubtless the same species, though the leaves and flowers have fallen, occur in Dr. Gregg's collection, from "a spring northwest of Mapimi." — The leaves of this remarkable species resemble those of Chlora perfoliata. They are not at all narrowed below, but connate-perfoliate from a broad base, thickish, scarcely an inch long, the upper smaller and inclined to be lanceolate and acute. Heads nearly as large as in the preceding species.

† HYMENATHERUM, *Cass., DC.* (excl. § 2), non *Less.*

Pappus e paleis 10 indivisis vel superne trifidis, aut omnibus aut alternis 1–3-aristatis; aristis scabris. Squamæ involucri 1–2-seriales, in cupulam pl. m. concretæ.

§ 1. Paleæ pappi rigidæ, conformes, alternæ paulo breviores, omnes aristatæ vel acutatæ. Involucrum bracteatum, squamis fere ad apicem concretis. — Herbæ biennes? erectæ, rigidæ, glabræ; foliis linearibus, pinnatifido-laciniatis dentibus subulatis, vel integris; pedunculis subcorymbosis nudiusculis.

H. tagetoides: caule pedali apice corymboso; foliis elongatis subpinnatifidis, nempe, laciniis elongato-subulatis utrinque 6–10 instructis, ramealibus integrioribus; bracteis utrinque pauci-setigeris involucro cylindracei-campanulato (sicco cartilagineo) subbrevioribus; ligulis elongatis; receptaculo convexo alveolato; pappo achenio 4–5-gono breviore tubum corollæ disci non superante, paleis coriaceis lanceolato-subulatis subtrifidis vel integriusculis 1–3-cuspidatis seu apice subaristatis. Dysodia tagetoides, *Torr. & Gray, Fl.* 2. *p.*

408. LOWELLIA, *Nov. Gen.* Tagetinearum.

Capitulum multiflorum, heterogamum; floribus radii ligulatis fœmineis, disci tubulosis hermaphroditis. Involucrum campanulatum, ebracteatum, gamophyllum; squamis subbiserialibus lanceolatis inferne carinatis ultra medium coalitis. Receptaculum convexum, nudum. Ligulæ circiter 12, ellipticæ, exsertæ (deciduæ). Corollæ disci infundibuliformes, 5-dentatæ. Styli rami fl. hermaph. apice capitellato-truncati puberuli. Achenia elongata, teretia, multistriata, pappo simplici brevissimo, e paleis 6–8 liberis æqualibus

361. In moist places, Western Louisiana, *Leavenworth;* and Texas, *Drummond, Lindheimer, Wright;* flowering in August and September. — Manifestly allied to the next, which has strictly the characters of Hymenatherum, although of different habit from the original species.

H. Wrightii (sp. nov.): caule dodrantali a basi ramoso; ramis adsurgentibus apice nudis monocephalis; foliis anguste linearibus integris aut plerisque versus basin longe attenuatam utrinque dentibus laciniisve spinulosis 1–3 instructis; bracteis subulatis appressis involucro turbinato chartaceo multum brevioribus; ligulis breviusculis; receptaculo plano nudo; pappo achenio gracili sublongiore, e paleis angustis subæqualibus trifidis omnibus 3-aristatis, arista media corollam fl. disci paulo superante lateralibus duplo longiore. — In dry Post-Oak woods between the Rio Colorado and Rio Guadeloupe, Texas, *Mr. Charles Wright.* Also on the Piedernales, *Lindheimer.* Flowering from April to June. — Heads smaller than in the preceding; the scales of the involucre perfectly united in one series. Leaves one or two inches long, scarcely a line wide.

H. Neæi, *DC.*, appears to belong to this section. H.? Kunthii, *DC.* = Lasthenia obtusifolia, *β. DC.* and Rancagua Bridgesii, *Pœpp. & Endl.*, according to *Hook. & Arn. in Jour. Bot.* 3. *p.* 320.

§ 2. Paleæ pappi membranaceæ vel chartaceæ, 5 alternæ plerumque breviores et truncatæ. Involucrum fere ebracteatum. — Herbæ humillimæ, ramosissimæ, annuæ, vel basi suffrutescentes; capitulis solitariis.

* *Glabræ vel cinereæ; folia rigida pinnato-partita, segmentis paucis acerosis vel filiformibus: pedunculi gracillimi nudi.*

H. tenuifolium, *Cass. Bull. Philom.* 1817 & 1818, & *Dict. Sci. Nat.* 22. *p.* 314, the original species of the genus, is still obscure. It was described from a specimen in the herbarium of Jussieu, "où il est dit avec doute qu'elle vient du Chili." It is said to be a small, diffuse, annual plant, with angled stems, opposite and filiform pinnate leaves, and solitary heads terminating the branches. In the generic character, the scales of the involucre are said to be united nearly to the summit; the pappus of 10 membranaceous scales, which are cleft above into two or three barbellulate setæ. Probably it should be placed in the foregoing section. Hooker and Arnott (*in Jour. Bot.* 3. *p.* 320) suspect it may be their H. Candolleanum, from Mendoza and North Patagonia. De Candolle doubtfully refers it to

H. tenuilobum, *DC. Prodr.* 5. *p.* 642. This is described from a specimen of Berlandier, gathered in the vicinity of Bexar, Texas, and from one in the collection of Neé, the habitat of which is unknown. It is said closely to resemble H. Berlandieri, except that the ten paleæ of the pappus are all (alike?) 3-cleft at the apex, with the middle lobe setiform, the lateral ones short and nearly membranaceous. — I have seen no specimens which agree with this as to the 10-awned pappus. But I possess a Texan specimen, communicated by Mr. Wright (who informs me that it is not of uncommon occurrence from the Nueces to the Rio Grande),

oblongis apice truncato-erosis enerviis, coronata. — Herba annua, glabra, grosse glandulosa, Dysodiæ chrysanthemoidis facie, sed foliis plerisque alternis atque ligulis aureis conspicuis. — Genus inter Dysodiam et Tagetem referendum, ab utrisque pappo parvo simpliciter et æqualiter squamellato plane diversum, dicavi in memoriam Hon. Johannis Lowell, qui non solum res georgicas sed etiam herbarias in Nova Anglia magnopere promovebat, in honoremque filii Johannis-Amory Lowell, de botanice bene meriti, itineris Fendleriani fautoris.

which well accords with the description, except that only from three to five of the paleæ of the pappus are awned, and which I consider as only a variety of the species referred below to H. pentachætum.

H. Berlandieri, *DC. l. c.* If Berlandier's plant, gathered between Santander and Vittoria, Mexico, is the same as Hartweg's no. 129, from Aguas Calientes in the south of Zacatecas (which alone I have seen), the species is well distinguished from the next by the more upright growth, the longer lobes of the leaves (the terminal an inch or more in length), and the smaller, fewer-flowered involucre, which is hardly two lines long, cylindraceous, and with the strictly uniseriate scales united to the top. The pappus has five of the scales much shorter than the others, oblong, truncate or very obtuse, and unawned; the five alternate ones oblong-lanceolate, bearing two short, more or less cuspidate or setigerous teeth at the apex, and between them produced into a slender and scabrous awn, a little shorter than the corolla.

H. pentachætum, *DC. l. c.* Of this it is said: "Facile cum H. Berlandieri et tenuilobo prima fronte confundendum, sed pappo 5- nec 10-setoso distinctum." The plant was gathered at Monterey, Mexico, by Berlandier. From the same locality (Monterey, near the Bishop's palace, &c.), as well as from the "highlands around Saltillo and Buena Vista," Dr. Gregg abundantly collected specimens which well accord with the character of this species, except that they all exhibit the five shorter and erosely truncate paleæ of the pappus, just as in the preceding. A specimen gathered at Monterey by Dr. Edwards exhibits the same characters; as also do those of Dr. Wislizenus, gathered farther west, between San Juan and Vequeria. I cannot but conclude that these shorter paleæ of the pappus were overlooked by De Candolle. The rigid, Heath-like foliage is densely crowded on the diffuse and tufted branches, and cinereous-pubescent: the naked peduncles are 2 inches long, and bear a few minute and scattered setaceous bracts: the campanulate or broadly turbinate involucre is three lines long, cinereous-puberulent; with the scales evidently biseriate, and distinct or separable, the exterior especially, for a fourth part or nearly half their length. The five awns of the pappus are nearly as long as the disk-corolla. — A Texan specimen, mentioned above, from Eagle Pass, on the Rio Grande, has one or two of the larger palcæ unawned and pointless, and has merely glabrous leaves: but I see no other distinction.

* * *Floccoso-lanatæ: folia integra spathulata: pedunculi fere nulli.*

H. gnaphalodes (sp. nov.): nana, undique albo-lanatissima; caulibus e radice annua? ramosis depressis proliferis; foliis plerisque alternis spathulatis integerrimis vel apice rotundato subdentatis confertis ad innovationes imbricatis; capitulis brevissime pedunculatis vel intra folia sessilibus; involucri 1 – 3-bracteati squamis uniseriatis connatis; ligulis 10 – 13 ovalibus exsertis; pappi paleis 5 majoribus lanceolatis alternas eroso-truncatas triplo superantibus apice in subulas 2 membranaceas et aristam mediam corollam disci subæquantem trifidis. — On Bishop's Hill, Monterey, February, *Dr. Gregg.* Called "*Lipillana.*" — Plant with much the aspect of Filaginopsis, *Torr. & Gray*, or of Diaperia, *Nutt.*; the rigid, but apparently annual, tufted stems

†408. L. AUREA. Between Cold Spring and Upper Spring, west of Cimarron Creek; Aug. (436.) — Stem a span or more in height, branching, leafy, very much resembling Dysodia chrysanthemoides, except in the ample and conspicuously exserted rays. Lower leaves mostly opposite, the others alternate, all pinnately parted or pectinate; the segments about 11, filiform-linear, entire, not broader than the rachis; the glands large in proportion, orange-colored. Heads solitary on naked peduncles, terminating the co-

only two inches high, terminated by sessile and equally woolly heads about a third of an inch long. Leaves 3 or 4 lines long, one or two lines broad near the summit. On separating the thick covering of white wool, a few large yellowish glands, like those of the tribe, may be seen on the leaves. From the involucre it separates more readily, and shows from 4 to 6 such globular glands arranged in two rows along the apex of each scale between as many pinnate veinlets: the glands appear to be superficial. Receptacle convex, naked. Ligules yellow, but turning greenish, 2 lines long. Pappus, style, &c., nearly as in the foregoing species, of which, notwithstanding its remarkable habit, it is certainly a congener.

ACIPHYLLÆA, *DC.* (sub Dysodia).

Capitulum multiflorum, heterogamum; floribus radii 5–8, ligulatis, fœmineis, disci tubulosis hermaphroditis. Involucri squamæ uniseriales, in cupulam oblongo-cylindricam apice breviter 8–14-dentatam concretæ. Receptaculum planum, minute alveolatum. Styli rami fl. disci cono brevissimo hispidulo capitellati. Achenia gracilia, teretia, multistriata. Pappus uniserialis, e squamellis circ. 20 conformibus (alternisve paulo minoribus), in aristas setasve scabras inæquales 3–5 palmato-partitis, constans. — Suffruticulus ericoideus, ramosissimus, diffusus, vix semipedalis, fere glaber; foliis oppositis alternisve confertis, sæpe in axillis fasciculatis, acerosis, integerrimis, grosse glandulosis; capitulis (3–4 lin. longis) apice ramulorum solitariis sessilibus, foliis supremis quasi calyculatis; floribus flavis.

A. ACEROSA. — Dysodia (§ ? Aciphyllæa) acerosa, *DC. Prodr.* 5. *p.* 641. Mexico, in the State of San Luis Potosi, *Berlandier*, ex *DC.* Near Saltillo and Parras, *Dr. Gregg.* Donana, north of El Paso del Norte, *Dr. Wislizenus.* — Called "*Yerba de San Nicolas*" at Saltillo: appears to be abundant in that part of Mexico. There are several forms in the collections, varying in the size and fasciculation of the leaves (the longer of which are half an inch long), &c.; but apparently all belong to one species, which I suppose to be that of De Candolle also, although I have not observed the involucre to be fewer than 10-toothed, nor are the achenia glabrous (though they appear so, except under the lens), but sparsely hairy. Perhaps there is more than one species. The whole aspect of the plant is very unlike Dysodia; from which the simpler pappus may serve technically to distinguish it; while from Hymenatherum it is distinguished by the numerous and more than 3-aristate paleæ of the pappus.

THYMOPHYLLA, *Lagasca.*

Capitulum homogamum. Pappus e "paleis 5 truncatis brevibus," vel in coronam fere integerrimam concretis. Cæt. Hymenatheri. — Suffruticuli multicaules, ramosissimi, albo-lanosi; foliis confertis setaceis integerrimis, vel infimis pinnato-partitis; pedunculis filiformibus nudis monocephalis.

T. SETIFOLIA, *Lag. Nov. Gen. Elench. Hort. Madr. p.* 25. Ex char. *Lagasc.:* Pappus pentaphyllus, paleis truncatis brevibus: folia opposita subsetacea, tomentosa, vix sesquilineam longa: pedunculi terminali,

rymbose branches, not calyculate. Involucre composed of 14 or 15 oblong-lanceolate scales which are concreted into a campanulate cup but pretty distinctly occupy two series, the exterior with their margins partly free, each bearing about four large and round glands. Rays 14 or 15, nearly 4 lines long, golden-yellow, as well as the numerous disk-flowers. Pappus scarcely half the length of the proper tube of the corolla, one sixth of the length of the nearly glabrous achenia; the paleæ all equal and similar, entirely awnless and nerveless.

villosuli, 2-pollicares: corolla atropurpurea, ut in sicco apparet. In Mexico. — This plant remains unknown to botanists, unless the following, which is certainly congeneric, should prove to be the same species.

T. Greggii (sp. nov.): spithamæa, basi multicaule suffrutescens, lana alba floccosa undique tomentissima; foliis oppositis alternisve, inferioribus ($\frac{1}{2}-\frac{2}{3}$ unc. longis) pinnato-3–5-partitis lobis setaceis, superioribus integris setaceis, ramealibus brevioribus (2–4 lin. longis) imbricatis vel fasciculatis; pedunculis erectis (2–4 unc. longis) demum glabratis, minutissime bracteatis; involucro circ. 15-dentato; acheniis gracilibus multistriatis glaberrimis pappo calyciformi margine subintegro iisdem corollisque flavis quadruplo breviore coronatis. — Dry valley and highlands near Buena Vista, Coahuila, *Dr. Gregg;* March. Called "*Contra-yerba.*" Except as to the concreted pappus, and the pinnated leaves, which do not appear on the flowering branches and might be overlooked, this plant nearly agrees with the brief characters of T. setifolia, given by Lagasca. The lower leaves are much less woolly when old; and under this covering scattered glands, like those of other Tagetineæ, may be discerned. The size of the heads in Lagasca's plant is not mentioned. In this they are only two lines long. The minutely 1–2-bracteate involucre also loses its woolly covering, and shows one or two large glands near the apex of each component scale. The receptacle is flat, and minutely alveolate or naked.

CLOMENOCOMA, *Cass.*

A solitary specimen of Clomenocoma aurantia, *Cass.*, brought from Mexico by Dr. Halstead ("Plan del Rio, April 16th") and which I have examined in *Herb. Torr.*, furnishes the following particulars to the generic character: — Ligulæ in tubulum longum gracilem sublatæ. Corollæ disci tubo proprio brevissimo, fauce cylindrica prælonga, lobis linearibus glabris. Styli rami fl. hermaph. elongati, lineis stigmaticis conspicuis percursi, cono subulato acutissimo hispido terminati. Paleæ pappi 10, in setam mediam longissimam simplicem vel bisetuligeram, squamellasque 2 iterum 2–3-fidas et in setas desinentes, profunde trifidæ. — Folia eglandulosa. Involucrum pluriseriatim imbricatum.

TAGETES, *Tourn.*

The pappus in this genus is remarkably various. The subjoined species, which has the aspect of T. micrantha, *Cav.*, is peculiar on account of the complete union of the paleæ and single awn into a tube which is longer than the achenium: —

T. Wislizeni (sp. nov.): annua, exigua, glaberrima; foliis alternis vel infimis oppositis interrupte pinnato-partitis, segmentis 7–10 setuloso-mucronatis, minoribus subulatis, majoribus linearibus vel oblongis inciso-3–7-dentatis; ramis fastigiatis in pedunculum nudum filiformem iisdem multo longiorem monocephalum desinentibus; involucro fusiformi apice constricto breviter 4-dentato circ. 8-floro; ligulis 2–3 brevissimis rotundatis vix exsertis; pappi paleis ut videtur 5 in tubum cylindricum achenio longiorem corollam prælongam sub-

409. RIDDELLIA TAGETINA, *Nutt.! in Trans. Amer. Phil. Soc. (n. ser.) 7. p. 371; Torr. & Gray, Fl. 2. p. 362, & Suppl. Compos. ined.; Torr. in Emory's Report, t. 5.* Valley of Santa Fé Creek, at the foot of hills, near irrigating ditches; June, July: also between San Miguel and Santa Fé, in woodland; Oct. (461.) — These are exceedingly fine specimens of a rare and interesting plant, which, from its profuse corymbose heads with their large, bright-yellow, papery-persistent rays, would be very ornamental in cultivation. Col. Emory likewise gathered specimens in New Mexico; and Dr. Wis-

claudentem apice uni- vel in radio bi-aristatum arcte coalitis, aristis barbellatis. — On high mountains around Cosiquiriachi, in the Sierra Madre west of Chihuahua, October, *Dr. Wislizenus.* — The stems of this little plant are only an inch and a half high; while the peduncles are nearly the same length. The purplish involucres are half an inch long; the filiform tube of the (yellow) ligules nearly as long. Receptacle convex, alveolate. Tube of the pappus unequally 3 – 4-toothed at the apex, and produced into a stout rough-barbellate awn much longer than the disk-corolla, or in the ray often with two such awns.

CHRYSACTINIA, *Nov. Gen. inter* Tagetearum et Porophyllearum?

Capitulum multiflorum, heterogamum; fl. radii 9 – 12, ligulatis, fœmineis, disci tubulosis hermaphroditis. Involucrum uniseriale disco brevius; squamis 9 – 12, æqualibus, distinctis, oblongo-linearibus, dorso carinatis, supra medium uniglandulosis. Receptaculum parvum, hemisphæricum, corneo-alveolatum. Ligulæ elongatæ, oblongæ. Corollæ disci tubulosæ 5-dentatæ, dentibus ad margines incrassato-puberulis. Styli fl. hermaph. rami elongati, anguste lineares, planiusculi, cono brevi obtuso hispidulo terminati, et dorso infra apicem minutim hirtelli. Achenia elongata, linearia, erostria, multistriata, hispidula, involucro fructifero laxo æquilonga, callo basilari manifesto. Pappus pilosus simplex; setis fere uniserialibus, denticulato-scabris, achenio longioribus. — Fruticulus Mexicanus, ramosissimus, glaber; ramis strictis conferte foliosis; ramulis floridis fastigiatis in pedunculis nudis parce setaceo-bracteatis monocephalis desinentibus; foliis alternis imisve sæpe oppositis, lineari-subulatis, mucrone apiculatis, crassis, supra ad costam sulcatis, utrinque serie glandularum grossarum rotundarum notatis; floribus aureis, ligulis disco duplo longioribus conspicuis. (Chrysactinium § Andromachiæ, *Kunth* = Liabium, *Adans.*)

C. MEXICANA. — Dry valley west of Saltillo, April; and on high grounds near Buena Vista, May, *Dr. Gregg.* Also at "Ojo del Agua," near the city of Mexico? *Dr. Halstead* (in herb. Torr.). Shrub one or two feet high, Heath-like; the rigid stems roughened with the scars of fallen leaves. The leaves are light-green, crowded, apparently persistent for two years, from one fourth to two thirds of an inch in length, flat or more or less involute, very conspicuously pustulate, especially underneath, with a row of large and impressed brownish glands. Peduncles one or two inches long. Heads an inch broad, including the elongated spreading rays. Involucre only two or three lines long; the single gland on each scale oval or oblong. Pappus longer than the achenium, somewhat tawny or livid. — This plant apparently is by no means uncommon; but I find it nowhere described. The characters of the style, in which the stigmatic lines extend through the whole length of the flattish branches quite into the short flattened-conical tip, as well as the principally alternate leaves, exclude the genus from the Eupectideæ, as do the glands of the leaves from the division Liabeæ. It must therefore be referred to Tagetineæ, where it combines the characters of the two divisions, having the rays and the style of the Tageteæ, with nearly the pappus, involucre, and foliage of Porophyllum. The name is given in allusion to the (golden-yellow) rays, which distinguish the plant from Porophyllum.

lizenus found it very common along the Rio Grande nearly as far south as El Paso. Before this, the genus was known only from scanty specimens in Dr. James's collection, made in Long's expedition, doubtless from the Upper Canadian, but the locality was not recorded. In establishing the genus, Mr. Nuttall omitted to state that his plant was derived from the collection of Dr. James, through Dr. Torrey, whose remaining specimen being mislaid at the time and forgotten, the character of the genus in the *Flora of North America* was drawn up from Nuttall's published description alone.* This requires emendation as to the involucre, which is by no means gamophyllous. A second species with some remarkable peculiarities having now been detected, the full characters of the genus, and of the two species, are here subjoined.† The aspect is rather that of Zinnia than of

* Dr. Torrey's remark in respect to the discovery of the plant, in *Emory's Report*, *p.* 144, is founded on the same misapprehension as to the discoverer.

† **RIDDELLIA**, *Nutt.* **(char. augm.)**

Capitulum pluriflorum, heterogamum; fl. radii 3, ligulatis, fœmineis, persistentibus; disci 6 – 9 tubulosis, hermaphroditis. Involucrum cylindricum, pilis longis intertextis lanatum, e squamis 8 – 10 oblongo-linearibus coriaceis rigidis conniventibus (sed discretis) uniserialibus, cum 3 – 6 interioribus anguste linearibus scariosis æquilongis, constans. Receptaculum planum, subalveolatum. Ligulæ ratione capituli maximæ, e basi breviter tubulosæ abrupte dilatatæ (latiores quam longæ), planæ, apice 3 – 4-lobæ, post anthesin ampliatæ et chartaceæ, persistentes. Corollæ disci tubulosæ, 5-dentati, dentibus glandulosis. Styli fl. hermaph. rami apice capitellato-truncati minutim barbati. Achenia lineari-oblonga, 4 – 5-angulata, multistriata; radii leviter obcompressa. Pappus simplex, achenio brevior, 4 – 6-paleaceus; squamellis oblongis vel lanceolatis, hyalino-membranaceis, enerviis, muticis, subæqualibus, aut integris nudis, aut lacerato-piligeris! — Herbæ humiles, floccoso-lanatæ, ut videtur annuæ, subaromaticæ, caulibus fastigiato-ramosis foliosis; foliis alternis oblanceolatis integerrimis, infimis et radicalibus spathulatis sæpe paucidentatis vel subpinnatifidis; glandulis immersis vix ullis; capitulis ad apicem ramorum corymbosis; floribus aureis, ligulis post anthesin pallidioribus (sulphureis).

1. R. TAGETINA (*Nutt. l. c.*): ramis fastigiato-corymbosis; foliis patentibus; pedunculis capitulis longioribus; acheniis glabris; pappi paleis obtusis integerrimis. — Plant 7 to 15 inches high, less woolly with age; the erect-spreading branches usually fastigiate. Peduncles elongating after anthesis, becoming from half an inch to an inch long. Rays from a quarter to over a third of an inch in length and breadth. Pappus almost half the length of the disk-corolla.

2. R. ARACHNOIDEA (sp. nov.): caule parce ramoso foliisque dense lanatis strictiusculis; corymbo conferto; pedunculis involucro brevioribus; acheniis pilis longissimis arachnoideo-villosis; pappi paleis diaphanis superne in pilos arachnoideos prælongos lacerato-diliquescentibus. — Dry soil, around Buena Vista and Saltillo, *Dr. Gregg*, *Dr. Wislizenus*: also near Monterey, *Dr. Edwards*. — Plant 6 or 8 inches high, with much the aspect of the preceding; but the leaves are mostly narrower and the heads smaller and more crowded. The rays, which are usually 4-lobed, in the dried specimens are orange-colored even when old (instead of sulphur-yellow) as well as during anthesis. The delicate, cobwebby hairs which cover the young achenium are much like those which densely clothe the involucre: they exceed the achenium itself in length, mingling with those into which the thin, lanceolate pappus-scales are lacerate-dissected. In all other particulars this remarkable species well accords with the former.

Tagetes; the pellucid glands are wanting or indistinct; and the styles exactly correspond with those of many Helenieæ; in which subtribe, next to Bahia, I should therefore prefer to place the genus.

†410. GAILLARDIA LANCEOLATA, *Michx.* On the Arkansas near Walnut Creek; Sept. (453.)

411. G. PULCHELLA, *Foug.*; *Torr. & Gray, Fl. 2. p.* 366. On the Cimarron and Pawnee Fork of the Arkansas; Aug., Sept. (454.)

†412. G. PINNATIFIDA, *Torr. in Ann. Lyc. N. Y. 2. p.* 214; *Torr. & Gray, l. c.* Foot of dry, stony hills, Santa Fé; June, July. (450.) — A dwarf species, readily distinguished by its pinnately-parted leaves, with the divisions and rachis narrowly linear. The root is probably only biennial; the naked peduncles as long as the stems; and the rays, in Fendler's specimens, entirely yellow. It is also in Col. Emory's collection, from New Mexico, and in Dr. Gregg's from Chihuahua.

†413. G. PINNATIFIDA, *Torr.:* var. minus canescens; involucri squamis ligulas (flavas) æquantibus vel superantibus. Seven miles east of Rock Creek, New Mexico; Aug. (451.) — Also gathered in Fremont's third expedition, probably towards the sources of the Arkansas. Specimens intermediate between this and the preceding number were gathered by Dr. Gregg at San Pablo, below Chihuahua. — The naked peduncles are from 6 to 10 inches in length, usually much longer than the leafy stems; so that the plant approaches Agassizia, *Gray & Engelm. (in Proceed. Amer. Acad. p.* 48) in aspect; but the appendages of the style, the rays, &c., are as in the rest of the genus.* Cultivated from seeds gathered by Fendler, it proves to be a very ornamental plant.

†414. G. PINNATIFIDA, *Torr.:* var. foliis imis sinuato-pinnatifidis. Otherwise as in no. 451. Rio del Norte, at the foot of hills; May. (452.)

415. PALAFOXIA (PALINODIA†) HOOKERIANA, β. SUBRADIATA, *Torr. & Gray, Fl. 2.*

* To the subdivision Eugaillardieæ, *Torr. & Gray, l. c.* belongs also the genus Cercostylis, *Less.*, which exhibits not only the style of Gaillardia (viz. a filiform hispid appendage rising abruptly from the more hispid tuft which surmounts the apex of the stigmatic portion), but likewise the same corneous subulate fimbrillæ of the receptacle.

† The original Palafoxia does not belong to the first section of this genus in the *Fl. N. Amer.*, which therefore cannot retain the name of *Eupalafoxia.* The paleæ of the pappus are equal, or the alternate ones slightly shorter in all three of the subgenera of the work above cited. In the true EUPALAFOXIA, containing P. linearis, *Lagasca* (which has been found in California by Coulter and Emory, along with a striking large variety ? having broadly lanceolate leaves and 30–40-flowered heads over an inch in length), the heads are entirely discoid and homogamous, two or three of the exterior flowers sometimes smaller; the scales of the oblong involucre equal; the lobes of the corolla much shorter than its elongated tubular-infundibuliform throat; and the four alternate paleæ of the pappus manifestly shorter.

P. Hookeriana, Texana, and callosa are all very handsome plants in cultivation, in the Cambridge Botanic

p. 368. Deep sand between Rabbit's Ear Creek and Willow Bar, Sept., and in the sandy bed of Dry Creek, near Bent's Fort. (455.) — Dr. Wislizenus gathered it in New Mexico, at the northern extremity of the Jornado del Muerto; with the exserted trifid rays, as in Fendler's specimens, half an inch long.

416. Schkuhria (Amblyopappus? v. Achyropappus § ligulis nullis) Neo-Mexicana (sp. nov.): strigoso-puberula, humilis; foliis inferioribus pedato-5–7-partitis, superioribus simpliciter 3-partitis segmentis lobisque anguste-linearibus; capitulis omnino discoideis 30-floris; acheniis lineari-cuneatis basi ad angulas villosis; pappi paleis 8 conformibus obovatis obtusissimis basi incrassato excepto enerviis corollam subæquantibus. — Margin of fields, Santa Fé; July, Aug. (458.) — Root annual. Stems 6 inches high, branched from the base; branches corymbose, bearing single or few heads (about as large as those of S. (Achyroppapus) senecioides, *Nees*) on slender peduncles. Leaves somewhat cinereous; the uppermost entire, and like the segments of the others, only half a line wide. Scales of the involucre about 10, pubescent outside, nearly as long as the disk. Achenia slender, conspicuously hairy on the angles towards the attenuated base. Branches of the style tipped with a very short conical appendage. Corolla yellow. — This plant entirely accords with Achyropappus except that it has no rays. It closely resembles Schkuhria multiflora, *Hook. & Arn.* (*in Jour. Bot.* 3. *p.* 322), from Mendoza, which is also rayless; but the pappus of that species consists of narrower and acutish paleæ, less thickened at the base, the alternate ones with a percurrent, or sometimes excurrent, midnerve. These plants, therefore, with the uniligulate S. Bonariensis, *Hook & Arn. l. c.*, appear inevitably to connect, not only Achyropappus, *H. B. K.*, but also Amblyopappus, *Hook & Arn. in Jour. Bot. l. c.*, with Schkuhria; one of the species of which (S. virgata, *DC.*) is said sometimes to want the solitary ray. Unless there is some diversity in habit beyond what the published character of Amblyopappus would indicate, this name should be preserved for the section of Schkuhria comprising these many-flowered homogamous species with awnless pappus. — Hopkirkia, *DC.*, it would appear from a plant in the collection of Dr. Wislizenus,* must also be reduced to Schkuhria.

Garden. Some indigenous specimens of the latter, gathered in Texas by Mr. Wright, have many of the achenia with an abortive pappus. Mr. Wright has also communicated some fruits of what would appear to be the same species, except that the achenia are glabrous, and entirely destitute of pappus.

* Schkuhria Wislizeni (sp. nov.): tenella, pube scabra subcinerea; foliis plerumque trisectis, lobis filiformibus; involucro unibracteato 4-phyllo 4–5-floro; floribus omnibus tubulosis hermaphroditis vel unico brevissime ligulato; acheniis obpyramidatis angulis longe villosissimis; pappo corollam subæquante, paleis 4 ex angulis achenii ovatis obtusis nervo valido excurrente breviter aristatis, 4 alternis similibus sed muticis

417. HYMENOPAPPUS FLAVESCENS (sp. nov.): floccoso-tomentosus vel incanus, demum glabratus; caule apice corymboso; foliis 1–2-pinnatipartitis lobis linearibus, ramealibus integerrimis vel basi lobulis 1–3 instructis; capitulis dense corymbosis; involucri squamis circiter 8 ovatis viridibus apice petaloidea corollisque luteis; acheniis villosis; pappo conspicuo corollæ tubo dimidio breviore, paleis obovatis integerrimis. — Between San Miguel and Las Vegas, New Mexico; Aug.: (464), with the lobes of the leaves broadly linear. Also a form of the same, with finer lobes to the cauline leaves, in deep sand a few miles west of Willow Bar of the Cimarron; Aug. in fruit (463); and near the Cimarron by *Dr. Wislizenus.* — Plant 15 inches high, bearing a rather ample corymb of larger heads than those of H. corymbosus; the appressed involucral scales petaloid only towards the apex and edges, where they are tinged, like the corolla, with a decidedly yellow color. The achenia and pappus are more nearly as in H. artemisiæfolius. Lobes of the leaves from one to three lines in width. Limb of the corolla broadly campanulate, longer than the lobes, both together about the length of the glandular tube. — In Dr. Wislizenus's specimen, the earlier, white-woolly radical leaves are simply pinnatifid, or some of them almost entire; the succeeding bipinnately divided; the corymb very large and full.

† 418. H. TENUIFOLIUS, *Pursh; Torr. & Gray, Fl. 2. p. 373.* Prairies, Ojo de Bernal to Rock Creek, New Mexico; Aug. (465.)

419. H. LUTEUS, *Nutt.; Torr. & Gray, l. c.* Along the sloping sides of dry hills, Santa Fé; May to July. (456.) — These beautiful specimens, the larger over a foot in height, show the plant more fully developed than the original ones of Nuttall. The full-grown heads are half an inch in length and diameter; and the appressed scales of the involucre are a little tinged with purple at the tip. The anthers also appear to have been purplish; but the corolla is cream-color, or pale-yellow, and its teeth much shorter than the cylindraceous throat, which exceeds the tube in length. The spatulate or narrowly

nervo evanido. — High mountains around Cosiquiriachi in the Sierra Madre west of Chihuahua, Oct., *Dr. Wislizenus.* — Annual; the stem 5 to 9 inches high, bearing few or rather numerous paniculate heads. Leaves minutely glandular-punctate, as in many Heleniæ; the lowest opposite and often simple, linear-filiform; the others mostly alternate and 3-parted, with the filiform lobes entire or rarely 2–3-lobed; the uppermost again simple. Heads about as large as in S. abrotanoides; the obovate scales of the involucre petaloid (tinged with yellow) at the summit. Tube of the corolla glandular, the limb 4-lobed; the pistillate flower, observed in only two out of twenty capitula, with an obovate ligule, not larger than the perfect flowers. Pappus at length tinged with purplish, the ample paleæ entire, the awned tips of the alternate ones equalling or at length exceeding the corolla.

oblong scales of the pappus are nearly as long as the tube of the corolla, but are concealed by the long villous hairs of the achenium.*

* Chænactis denudata, *Nutt. in Jour. Acad. Philad.* (*n. ser.*) 1. *p.* 177, from Pueblo de los Angelos, California (*fide spec. in herb. Lowell.*), is the same as C. lanosa, *DC.* The subjoined appears to be an undescribed species: —

CHÆNACTIS FILIFOLIA (*Harv. & Gray, in Pl. Coult. ined.*): subarachnoidea, demum glabrata; caule corymbosi-ramoso usque ad apicem folioso; foliis pinnatipartitis (summisve simplicibus); segmentis 5–9 rachique filiformibus integerrimis; pedunculis brevibus non glandulosis; corollis (flavis) radiantibus infundibuliformi-ampliatis irregularibus discum non superantibus; pappi paleis 4 oblongis obtusis æqualibus. — California, *Coulter.* — Heads about as large as in C. lanosa. Lobes of the leaves entire, more slender and sparse than in C. tenuifolia. In that species the scales of the pappus in the disk are unequal, lanceolate, and acute or acuminate. In this they are much shorter and broader, obtuse or rounded, and erose at the apex, especially those of the ray. — There is another species in Fremont's, and also in Hartweg's, Californian collection, which is exceedingly well marked by the great inequality in the paleæ of the pappus, viz.: —

C. HETEROCARPHA (*Torr. & Gray, Fl. ined.*): annua, nana, lanosa, demum glabrata; caule folioso plerumque simplici monocephalo; foliis pinnatipartitis, segmentis 4–9 anguste linearibus breviusculis integerrimis rachi subangustioribus; pedunculo eglanduloso capitulum majusculum eximie radians vix duplo excedentibus; corollis (aureis) radiantibus infundibuliformi-ampliatis, limbo irregulari discum superante; achenio hirsuto; pappo disci e paleis 4 lanceolato-oblongis obtusissimis corollam æquantibus et 4 alternis parvis obovatis 5–6-plo brevioribus. — California, *Fremont* (third expedition), *Hartweg* (no. 1792). — Plant 3 to 5 inches high, rather slender, leafy to within an inch of the head, the stronger specimens inclined to branch above and bear one or two additional heads. Leaves an inch and a half long; the lateral lobes two or three lines in length, almost filiform. Head larger than in C. lanosa, nearly equalling that of C. achilleæfolia: involucre half an inch long. The somewhat palmate limb of the radiant corollas is four lines broad when expanded; the lobes as long as the tube. Pappus of the radiant flowers as in the disk, but shorter.

The following appears to constitute a distinct genus, which should probably stand (perhaps with Amauria, *Benth.*) next to Chænactis rather than with the Madieæ, notwithstanding the total absence of pappus.

ACARPHÆA, *Harv. & Gray, in Pl. Coult. ined.*

Capitulum multiflorum, homogamum; fl. omnibus tubulosis, exterioribus ampliatis subradiantibus. Involucrum campanulatum circ. 24-phyllum; squamis biseriatis, lanceolatis, discum æquantibus, planis. Receptaculum nudum, planum. Corollæ, tubo glanduloso-pubescente, disci graciles 5-dentatæ; radii sursum infundibuliformi-ampliatæ, 5-lobæ, limbo subirregulari. Antheræ exsertæ. Styli rami filiformi-subulati, hirtelli (ut in Chænactide). Achenia omnia (ut videtur) fertilia et conformia, lineari-clavata, subcompressa, multistriata, glabra, calva, extima paulo incurvata, in squamis involucri haud occulta. — Herba erecta, viscido-puberula; foliis alternis 2–3-pinnatisectis; capitulis paniculato-corymbosis; floribus luteis.

A. ARTEMISIÆFOLIA, *Harv. & Gray, l. c.* — California, *Coulter.* — Herb apparently three feet high, naked above: the root unknown. Leaves 3 or 4 inches long, petioled, glandular-hoary, especially underneath; the pinnæ, segments, and lobes linear or oblong, obtuse, numerous and approximate. Involucre half an inch long; the outer scales herbaceous; the inner narrower and more scarious, not complicate. Marginal corollas scarcely longer than the others. The achenia are immature, but apparently all fertile; the outer are not at all involved

420. Bahia oppositifolia, *DC. Prodr.* 5. *p.* 656. (Trichophyllum oppositifolium, *Nutt.! Gen.* 2. *p.* 167.) In ravines and low places, from eight miles east of Santa Fé to Cold Spring, on the Cimarron; August. (469.) — This long-lost plant has also been recently gathered by Mr. Geyer on the Upper Platte, and by Lieut. Abert on the frontiers of New Mexico. The spreading, branching stems, a span or little more in height, apparently rise from a creeping rootstock, and, like the 3-parted leaves, are cinereous or canescent with a close pubescence, but not tomentose. The uppermost leaves are often alternate. The scales of the campanulate involucre are somewhat lax, as in B. absinthifolia; the rays short, but sometimes considerably exserted; the achenia glabrous and minutely glandular; and the scales of the pappus have an opaque midnerve (which is unusually distinct and percurrent in Geyer's specimens) and are otherwise more membranaceous than in the Eriophylla. — This plant is certainly a congener of the original Bahia of Lagasca, viz. the Chilian B. ambrosioides (on which Nuttall founded his genus *Stylesia*), and of the Mexican B. absinthifolia. These, with an undescribed Mexican species,* constitute the typical section of the genus, which is to be distinguished from the section (rather than genus) Eriophyllum, *Lag.* by the loosely campanulate involucre, the scales of which are membranaceo-herbaceous and more or less spreading in fruit; by the paleæ of the pappus of a more membranaceous texture, but thickened at the base or axis or manifestly one-nerved; and by being merely cinereous or canescent, not clothed with floccose wool. The paleæ of the pappus in B. ambrosioides are not altogether nerveless, as characterized by Nuttall, but have a more or less thickened axis. Nor can the branches of the style be said to be "terminated by a *minute* cone," but they are better described by Hooker & Arnott (*in Jour. Bot.* 3. *p.* 321), as bearing a fleshy, apiculate cone, instead of having the truncate styles of Eriophyllum. In fact, the conical appendage of the branches of the style is quite large: in B. oppositifolia it is much the same, but smaller and obtuse; in B. absinthifolia it is penicillate-truncate with

by the involucral scales; and there is no chaff on the receptacle. The generic name accordingly refers to the absence both of the chaffy pappus of Chænactis, and of the chaff of the receptacle of the Madieæ.

* Bahia dealbata (sp. nov.): herbacea, tomento brevi subdecidua? undique argenteo-cana; foliis oblongis lanceolatisve integerrimis seu cuneatis trifidis basi trinervatis; ramis apice 1–2-cephalis nudis; involucri squamis obovatis acutiusculis; pappo corollæ tubum æquante, paleis 7 obovatis obtusissimis æqualibus nervo valido percursis. — Valley between Mapimi and Guajuquilla, and at Cadenas, Chihuahua, *Dr. Gregg;* April, May. — Stems ascending, 6 or 8 inches long; the base and the root wanting. Lower leaves opposite, the upper alternate, all petioled, an inch long, some entire, others with two spreading and lanceolate or linear entire lobes. Heads, the numerous and rather elongated rays, style, &c., nearly as in B. absinthifolia, but the scales of the involucre broader; the whole plant uniformly whitened with a pulverulent tomentum, which may be rubbed off.

a very minute apiculate cone. On the other hand, the conical appendage is manifest in some of the Eriophylla, as in B. leucophylla. If the two genera are to be restored, they must bear the names originally imposed by Lagasca. Eriophyllum trolliifolium, *Lag.*, which is yet to be identified, is certainly of a different genus.*

421. ACTINELLA ARGENTEA (sp. nov.): caulescens, undique sericeo-incana; caulibus (4–10-uncialibus) inferne ramosis adscendentibus apice longe aphyllo monocephalis; foliis integerrimis oblanceolatis nitento-sericeis, imis rosulatis spathulatis 3-nerviis, caulinis superioribus linearibus uninerviis; involucri squamis 3-seriatis lanceolatis; pappi paleis lato-ovatis breviter aristatis, nervo evanido. — Gravelly and stony hills, around Santa Fé; April to June. (457.) — This showy species most resembles A. acaulis; but is larger, and apparently does not grow in dense tufts; the branching stems are leafy to the middle, and the silky pubescence of the leaves is closer and more silvery. The larger specimens are ten inches high; and the stems apparently continue to produce flowering branches through the summer. The heads, with the expanded rays, are fully an inch and a half in diameter. Ligules 15, cuneate, half an inch long. Receptacle hemispherical. The silky achenia and the pappus are silvery-white; the latter of broader paleæ with shorter awns than in A. acaulis. — The latter was gathered by Dr. Wislizenus between Rabbit's Ear and Rock Creeks; and Dr. Gregg found at Buena Vista an allied species with narrower and glabrate leaves, which I take to be a taller form of A. Torreyana.†

* Bahia arachnoidea, *Fisch. & Lallem. in Ind. Sem. Hort. Petrop.* 1842, remarkable for its dilated rhombic or cuneiform and barely lobed leaves, and for a very short pappus, was also gathered at San Francisco, California, by the U. S. Exploring Expedition. B. latifolia, *Benth. Voy. Sulph. p.* 30, from Bodegas, would appear to be the same species, with more lobed leaves; but the short paleæ of the pappus are more than four in our plant, and the heads are smaller than those of Bahia lanata.

† Two species have been added to this genus by Fremont, viz. the A. grandiflora, *Torr. & Gray, in Bost. Jour. Nat. Hist.*, collected in his first expedition, which has pinnately-parted simple leaves, and leafy stems, bearing a head nearly as large as that of Gaillardia aristata; and the following: —

ACTINELLA DEPRESSA (*Torr. & Gray, Fl. ined.*): nana, escaposa, multiceps, caudicibus dense cæspitosis oblongis foliis anguste linearibus punctatis glabratis basi vaginata imbricante lanatissimis suffultis capitulo arcte sessili terminatis; pappi paleis 5–6 ovatis acuminato-aristatis corolla disci paulo brevioribus. — Rocky Mountains, apparently at a great elevation, the locality unknown, *Col. Fremont;* collected in the second expedition. The thick, matted stems are only an inch high; and the heads, which are nearly as large as those of A. acaulis, are strictly sessile and immersed among the very woolly bases of the leaves. Rays yellow. Paleæ of the pappus more or less thickened along the axis.

Var. β. PYGMÆA: caudicibus cum capitulo globulosis; foliis junioribus cano-sericeis, annotinis glabratis. — Raton Mountains, April, 1848, *Mr. A. Gordon.* — The specimens, with some other interesting plants

†422. A. SCAPOSA, *Nutt.*, var. MUTICA: pappi paleis obtusis muticis vel in paucis mucronatis corolla disci 2–3-plo brevioribus; foliis sæpius integerrimis. (A. glabra, *Nutt.?*) — Woodlands, from Pecos to San Miguel; Aug. (466.) — The size and shape of the paleæ of the pappus and the length of their awn vary considerably in A. scaposa, both in Texan and North-Mexican specimens (from Buena Vista and Carrizitos, *Dr. Gregg*), some of which exhibit the shorter paleæ of the present variety; and "on the Arkansas" Dr. Wislizenus gathered a closely related form, in which the paleæ are slightly awned or awnless, and some of the leaves are lobed. The leaves become glabrous. I suspect that this will prove to be the A. glabra of Nuttall, but have no specimen for comparison.

423. A. RICHARDSONII, *Nutt.; Torr. & Gray, Fl.* 2. *p.* 381; var. FLORIBUNDA. Rocky hills, as well as plains and creek-bottoms, around Santa Fé; June, July. (460.) — The stems are taller than in Richardson's plant from Carlton House (from a span to a foot high), and branch copiously and repeatedly above, the branchlets terminated by single heads, so as to form a broad fastigiate corymb. The somewhat woody caudex and the base of the stems are woolly, as also in the original plant. The heads (as usually happens when increased in number) are smaller than in the original specimens and in the figure by Hooker, but I perceive no further difference. The involucre and the whole characters of this plant are closely like those of Hymenoxys (Oxypappus) odorata, *DC.*, although in that plant the tube of the corolla is a little longer and the pappus denticulate. De Candolle's second section of Hymenoxys must therefore be reduced to Actinella, leaving in the former genus only the discoid (South American) species.* Ptilomeris,

from the same district, kindly sent to me by Dr. Engelmann, came to hand while this sheet was undergoing revision. These are much smaller than those of Fremont, measuring only half an inch from the root proper to the top of the head, which is also smaller; but it is plainly a form of the same species. — Mr. Gordon also gathered, on the sources of the Canadian, Actinella acaulis, and the species mentioned above as a taller state of A. Torreyana, *Nutt.* The caudexes of the latter are rather slender, surmounted by slender scapes of four or five inches long; the pappus in the ray is awnless, but in the disk short-awned.

* ACTINELLA ODORATA (Hymenoxys, *DC.*), which appears to be an annual, was gathered by Col. Emory in Western New Mexico; by Dr. Wislizenus at Bachimba, below Chihuahua; and by Dr. Gregg farther south, at Bolson de Mapimi, where he states that it forms a "broadly conical bunch of two feet in height and diameter." The local name is "*Manzanilla Cimarron.*" — It is also in Mr. Gordon's collection, from towards the sources of the Canadian.

The collection of Dr. Wislizenus furnishes a new plant of this group, well distinguished from Actinella and its allies by the small and flat receptacle, and by a pappus of a dozen barbellulate bristles which are membranaceously margined towards the base; from which character I have proposed for it the name of

Nutt.; which I referred to Hymenoxys in the *Flora of N. America*, is doubtless distinct, as Mr. Nuttall insists.* The naturalists of the Exploring Expedition met with this

HYMENOTHRIX, *Nov. Gen.*

Capitulum multiflorum, heterogamum; fl. radii 8–10 ligulatis fœmineis, disci tubulosis. Involucrum turbinatum, disco brevius, e squamis circiter 10 lanceolato-oblongis, subbiseriatis, æqualibus, appressis. Receptaculum parvum, planum, nudum, papillosum. Ligulæ spathulato-oblongæ, apice 3-dentatæ, discum haud superantes. Corollæ fl. hermaph. elongatæ, tubo gracili minutim glanduligero, fauce infundibuliformi 5-loba lobisque margine vix incrassatis glabris. Antheræ ecaudatæ, exsertæ, appendicula ovata superatæ. Styli rami fl. hermaph. lineares, cono brevi superati. Achenia lineari-cuneata, sub 4–5-gona, glabriuscula. Pappus simplex, radii et disci conformis, corolla paulo brevior, e setis 12–13 equalibus sursum barbellulatis infra medium membranula hyalina lanceolata integerrima utrinque limbatis. — Herba annua? amara, subglabra; caule erecto corymboso; foliis alternis petiolatis biternatisectis, segmentis integris vel trifidis lobisque linearibus; capitulis corymbosis; floribus radii et disci flavis.

H. Wislizeni. — Grassy places, Ojo de Gallejo, between El Paso del Norte and Chihuahua, August, *Dr. Wislizenus.* — Stem two feet high, rigid, loosely and amply corymbose at the summit; the branches, leaves, involucre, &c., minutely appressed-puberulent. Lower leaves triternately, the upper biternately, dissected; those of the branches 3–5-parted, or the uppermost simple; the segments a line or less in width, half an inch or more in length. Heads 4 lines long, on slender and minutely bracteate peduncles; the fully developed flowers nearly twice the length of the herbaceous and appressed involucre. Disk-corollas 3 lines in length, fully as long as the spreading rays; the sinuses between the ovate lobes slightly unequal. Branches of the style narrowly linear, semicylindrical or more flattened, glabrous, or minutely puberulent on the back, the prominent stigmatic lines extending to the base of the short, minutely bearded cone with which they are tipped. Pappus longer than the achenium, formed of narrow and diaphanous paleæ with a very strong midrib which is gradually excurrent into a prolonged, barbellate-denticulate awn. — I know of no genus of Euheleniæ with which this plant can be immediately compared, except Chætymenia, *Hook. & Arn.* (*in Bot. Beech.*, which the authors refer to Tagetineæ), Burrielia, *DC.*, and Oxypappus, *Benth.* In habit, foliage, &c., it is very unlike either of these: the pappus is much as in the former; but the style differs widely from the description and figures of this and the last-named genus.

* It appears to me almost certain that both *Ptilomeris* and *Dichæta* of Nuttall should be united to Burrielia, *DC.*, with the character a little extended as to the pappus. Ptilomeris affinis, *Nutt. in Jour. Acad. Philad.* (*n. ser.*) 1. *p.* 174, differs from P. aristata s. Californica, *Nutt.*, only in having the scales of the pappus minutely pectinate-ciliate down the sides; and from P. coronaria, *Nutt.*, only in the want of awns. A specimen of P. tenella, *Nutt. l. c.*, accords exactly in the pappus, and sufficiently so in other respects, with the anterior P. mutica, *Nutt.* The achenia of the ray are certainly fertile in some specimens of several, if not all, of these plants; nor do I find them infolded in the involucral scales any more than in Burrielia. The subjoined species technically belongs to Dichæta, but differs from Burrielia (especially B. gracilis) only by having very short and obtuse scales of the pappus interposed between the aristiform ones, and in the sparingly lobed leaves: —

Dichæta Fremontii (*Torr. ined.*): caulibus e radice annua adscendentibus gracilibus; foliis anguste linearibus nunc integerrimis nunc segmenta filiformia utrinque 1–2 gerentibus; squamis involucri et ligulis late ovalibus 8; pappo ex aristis 4 e basi subulata setiformibus tubum gracillimum corollæ subsuperantibus et

species between the Wallamet River and California; and a low form, with the heads even smaller than in Fendler's plant, exists in Fremont's third collection, apparently from the interior of the south part of Oregon. — Mr. Fendler gathered a monstrous state of this species, with the flowers of the head all pedicellate, so as to form an umbel, the pappus transformed more or less into bract-like lobes, the corolla prolonged and more herbaceous, the anthers distinct, &c.

squamis totidem parvis truncatis 2–3-fidis alternantibus. — California, *Fremont* (1846). — Heads as large as those of Burrielia gracilis; the branches of the style tipped with a similar capitate cone; while in B. microglossa and B. gracilis the appendage is more slender.

A more striking case of diversity in the pappus of plants which are otherwise almost undistinguishable occurs in Layia, *Hook. & Arn.* (Madaroglossa, *DC.*; Eriopappus, *Arn.*), Callichroa, *Fisch. & Mey.*, Calliglossa, *Hook. & Arn.*, and Calliachyris, *Torr. & Gray*, which it is becoming evident should all be viewed as sections merely of a single genus, to which perhaps even Oxyura, with no pappus at all, will ultimately be added. Thus combined, the sections of the genus would be characterized thus: —

LAYIA, *Hook. & Arn. Bot. Beech. p.* 148 (non *p.* 182).

§ 1. MADAROGLOSSA, *DC.* (Eriopappus, *Arn.*) Pappi aristæ setiformes, basin versus pilis tenuissimis prælongis lanato-plumosæ seu villosæ: receptaculum inter flores radii et disci tantum paleaceum.

Layiæ sp., *Torr. & Gray, Fl.* 2. *p.* 393, excl. no. 1. — L. elegans, which has been gathered by Coulter, Fremont, Hartweg, &c., occasionally is destitute of the crisped and interlaced wool of the inside of the pappus, which is then consequently less villous than in the other species, and connects this typical group with the third section.

§ 2. LAYIA, *Hook. & Arn.* Pappus ut in § 1: receptaculum inter flores disci exteriores paleaceum.

L. gaillardioides, *Hook. & Arn. l. c.* I have seen this species only in a collection made in California by some Russian botanist.

§ 3. CALLICHROA, *Fisch. & Meyer.* Pappi aristæ ut in § 2–3 sed nudæ: receptaculum inter flores radii et disci tantum paleaceum.

L. platyglossa. Callichroa platyglossa, *Fisch. & Mey. Ind. Sem. Hort. Petrop. & Sert. Petrop. fol. & t.* 5 (excl. syn. Madar. heterotr. *Hook.*).

§ 4. CALLIGLOSSA, *Hook. & Arn. l. c. p.* 356. Pappus e paleis inæqualibus subulato-aristiformibus achenio brevior, basi dilatata pl. m. ciliato-setigera, constans: receptaculum totum paleaceum.

L. Calliglossa. Oxyura, *Lindl. Bot. Reg.* (ex parte). Calliglossa Douglasii, *Hook. & Arn. l. c.; Fisch. & Mey. Sert. Petrop. fol. & t.* 6. — The wild specimens from the Russian collections show well the irregular hairs which fringe the base of the chaffy awns, plainly representing the longer hairs of Layia proper.

§ 5. CALLIACHYRIS, *Torr. & Gray.* Pappus e paleis (circ. 12 subæqualibus achenium æquantibus) ovato-lanceolatis, apice subulato-cuspidatis, nudis, vel basi pilis longis paucis interpositis: receptaculum etc. Calliglossæ.

L. Fremontii: humilis, diffusa; tubo cor. disci pubescente. Calliachyris Fremontii, *Torr. & Gray in Bost. Jour. Nat. Hist.* 5. *p.* 140. California, *Fremont* (in his second, and also in the third expedition), *Hartweg.* — The hairs sparingly interposed between the dilated scales of the pappus (much like those which clothe the achenium, though longer) are similar to the more abundant ones of L. heterotricha.

†424. HELENIUM AUTUMNALE, *Linn.* Bottom-land near the Mora River, August (467); and between Council Grove and Fort Leavenworth, Sept. (468.)

†425. AMAURIA? DISSECTA (sp. nov.): herbacea, puberula; caule adscendente apice corymbosi-polycephalo; foliis alternis petiolatis biternatisectis segmentis cuneiformibus vel sublinearibus sæpius 2–3-fidis, summis parvis; pedunculis glandulosis; involucri squamis oblongo-lanceolatis subtriseriatis, intimis subscariosis; receptaculo convexo; ligulis circiter 16; styli ramis fl. disci cono brevissimo truncati-capitatis; acheniis ad angulos lævibus. — A few miles east of Mora River; Aug. (537.) Also gathered in Fremont's third expedition, probably towards the head-waters of the Arkansas. — Stem 12 or 15 inches high, apparently from a perennial root. Leaves about an inch in diameter, cut into narrow divisions. Peduncles clothed both with viscous and capitate-glandular hairs. Involucre herbaceous, more or less viscous, a third of an inch in diameter. Receptacle entirely destitute of chaff. Flowers all yellow: rays linear-oblong, 2–3-toothed; the tube very glandular. Disk-corollas with the slender tube extremely glandular, the expanded 5-cleft limb slightly so. Branches of the style short, flattish-semiterete, capitate with a very short and flattish obtuse cone. Achenia cuneate-linear, slender, compressed-quadrangular, smooth; the ovary sprinkled with sparse and minute hairs. Pappus none. — The specimen of Fendler has not matured fruit; and the stamens are abortive in all the disk-flowers. The specimen from Fremont's collection, communicated by Dr. Torrey, is very imperfect, but has ripe achenia. From the character of the Californian genus Amauria, *Benth. in Bot. Voy. Sulph. p.* 31, this plant differs very essentially in the styles, and in the convex receptacle. But I am unwilling to constitute it a distinct genus upon the present imperfect materials.*

* Galinsoga parviflora, *Cav.*, was gathered by Dr. Gregg at Saltillo, and by Dr. Wislizenus at Cosiquiriachi, Chihuahua. The specimens from the latter locality have the pappus of the ray reduced to a few setiform squamellæ, and also in other respects agree with the Vargasia Caracasana, as described by De Candolle; but not with the figure in *Deless. &c. Sel.* 4. *t.* 47, where the pappus of the ray is represented nearly like that of the disk, and the latter as much shorter than the corolla instead of "paleæ corolla triplo longiores." Probably the Vargasia, *DC.*, is not even specifically distinct from Galinsoga parviflora, as Mr. Bentham has intimated. At Monterey, Dr. Edwards and Major Eaton gathered Tridax procumbens, *Linn.*; and Dr. Wislizenus's collection contains a single specimen of a second species, with red or purple rays, viz.: —

TRIDAX BICOLOR (sp. nov.): annua, humilis, glanduloso-pubentissima; caule erecto; ramis apice modice nudis monocephalis; foliis oblongis vel lanceolatis integerrimis (an semper); paleis receptaculi oblongis longe acuminatis; ligulis rubris cuneati-oblongis breviter 3-lobis; pappo purpurascente e setis circiter 20 achenium æquantibus corolla disci atque tubo ligularum dimidio brevioribus. — At Llanos in the Sierra Madre, west of Chihuahua, *Dr. Wislizenus:* flowering in November. — The specimen is only a span high, somewhat cine-

426. ACHILLEA MILLEFOLIUM, *Linn.* Moist meadows and foot of mountains along Santa Fé Creek; June – Oct. (509.) Also a variety with rose-colored flowers.*

reous with a viscous pubescence and, especially the summit of the branches (which are leafless for only one or two inches), hirsute with glandular-capitate hairs. Heads nearly as large as those of T. procumbens: but the ligules are considerably longer and "red" according to the note of Dr. Wislizenus: in the specimen some of them are of a deep pink-purple, others of a lighter hue. Disk-corolla (light-yellow), styles, achenia, and pappus nearly as in T. procumbens, except that the pappus is much shorter. The ligules exhibit two small interior lobelets, just as Sogalgina, *Cass.* is characterized (a genus which otherwise does not seem to be very distinct); but as I notice a similar, although single, often emarginate, small lobelet, in Tridax procumbens, I do not hesitate to refer our plant to that genus.

* The following is a very striking, chiefly New-Mexican genus of Anthemideæ-Chrysanthemeæ: —

BAILEYA, *Harv. & Gray, in Pl. Coult. ined.*

Capitulum 16 – 500-florum, heterogamum; fl. radii 6 – 60, ligulatis, fœmineis, 1 – 3-serialibus, marcescenti-persistentibus; disci tubulosis hermaphroditis. Involucrum lanatissimum 1 – 2-seriale, e squamis linearibus æqualibus appressis constans. Receptaculum planum, nudum. Ligulæ ovales vel cuneatæ, 7-nerviæ, apice 3-lobæ, basi unguiculata sessiles (tubulo nullo), post anthesin papyraceo-membranaceæ, persistentes. Corollæ disci cum ovario atomis resinosis conspersæ; tubo brevi; fauce infundibuliformi breviter 5-dentata; dentibus ovatis glanduloso-barbulatis. Styli rami fl. hermaph. apice truncato barbatuli. Achenia lineari-oblonga, prismatica, vel subteretia, multistriata, glabra, basi apiceque truncata, omnino calva. — Herbæ humiles, ut videtur biennes, undique albo-lanosissimæ; foliis alternis pinnatifidis seu integris; capitulis solitariis longe pedunculatis speciosis; floribus flavis post anthesin pallescentibus. — This genus is dedicated to *Prof. J. W. Bailey*, of the U. S. Military Academy, who is particularly distinguished for his researches among the minuter Algæ and especially the Diatomaceæ (which he was the first to detect in a fossil state in this country), for his microscopical investigations concerning the crystals contained in the tissues of plants, and for the detection of vegetable structure in the ashes of anthracite. Through B. pauciradiata this genus is not obscurely allied to Riddellia, which belongs to the same region, and which it imitates in the persistence of the dilated rays. But in the lineal series it would appear to stand next to Monolopia. There are three species known, viz.: —

* *Oliganthæ, villoso-lanatæ.*

1. B. PAUCIRADIATA (*Harv. & Gray, l. c.*): diffuse ramosissima; foliis (imis ignotis) caulinis et ramealibus linearibus integerrimis; pedunculis subcorymbosis; involucri campanulati squamis 8 – 10 uniserialibus; ligulis 5 – 6 ovalibus subtridentatis brevissime unguiculatis; floribus disci 10 – 12; acheniis subclavatis elongatis valde striatis muricato-scabris. — California, *Coulter.* — Stems 6 or 8 inches long (the base unknown), villous, like the leaves, &c., with lax or spreading woolly hairs. Peduncles filiform, an inch long. Rays 3 lines long, reflexed, overlapping each other, as long as the narrowly campanulate involucre.

* * *Myrianthæ, floccoso-lanosissimæ.*

2. B. PLENIRADIATA (*Harv. & Gray, l. c.*): caule ramisque simplicibus strictis apice longe nudis; foliis inciso-pinnatifidis vel paucidentatis, summis parvis linearibus integerrimis; involucri late campanulati squamis 20 – 30; ligulis 25 – 40 obovato-dilatatis breviter unguiculatis involucro longioribus post anthesin deflexis et pluriseriatim imbricatis; fl. disci 40 – 50; acheniis subprismaticis utrinque truncatis lævibus vel globulis resi-

† 427. ARTEMISIA DRACUNCULOIDES, *Pursh. Fl. 2. p. 742; Torr. & Gray, Fl. 2. p. 416.* Bottom of the Mora River; Aug. (511.)

nosis pl. m. conspersis. — California, *Coulter.* Valley of the Rio Nazas, &c., in Chihuahua, *Dr. Gregg;* flowering in April and May. — Plant from 8 to 16 inches high; the radical leaves somewhat bipinnatifid, with few segments; the upright branches naked above for the length of 4 or 6 inches, and bearing solitary heads (like Bahia leucophylla), which are nearly an inch in diameter with the rays outspread. These at maturity are five lines long and over three in width, at length reflexed over the involucre, which they conceal, in several series: although not really so numerous as in the next species, yet they are more strikingly imbricated, being more dilated and arranged around a smaller disk. The minutely bearded apex of the branches of the style exhibits in this species a more or less distinct central mucronation or slight cone: in the others they are absolutely truncate.

3. B. MULTIRADIATA (*Harv. & Gray, l. c.*): caule subsimplici vel basi ramoso ramisque adscendentibus superne longe nudis; foliis 1–2-pinnatifidis summisve parvis integris; involucro late hemisphærico polyphyllo; ligulis circiter 50 oblanceolato-cuneatis sensim unguiculatis involucrum triplo superantibus. — *Torr. in Emory's Report, p.* 144. *t.* 6. — California, *Coulter.* Interior of California near Hernandez' Spring, *Fremont.* Along the Rio del Norte, New Mexico, and in the region between it and the Gila, *Col. Emory.* Sandy plains near Albuquerque, *Dr. Wislizenus.* Near Chihuahua and valley of Rio Conchos, *Dr. Gregg.* — A stouter, and, when branched, a more spreading plant than the last; the leaves more pinnatifid; and the showy golden-yellow heads about twice as large, being over an inch and a half in diameter, including the narrowly oblong-cuneate rays, which are half an inch long. Achenia nearly as in the last, sprinkled with minute resinous globules.

Dr. Gregg and Dr. Wislizenus both collected a shrubby Composita, apparently of Anthemideæ-Athanasieæ (but this is uncertain), which I am unable to refer to any known genus. I have therefore characterized it, under its popular appellation, as given in Dr. Gregg's memoranda: —

VARILLA, *Nov. Gen.*

Capitulum discoideum, homogamum, multiflorum; fl. hermaphroditis. Involucrum turbinatum, imbricatum, pauciseriale, disco brevius; squamis subulatis. Receptaculum conicum, paleis angustissime linearibus (superne paulo dilatatis) onustum. Corollæ fauce cylindrica e tubo brevi gracili subito dilatata, 5-dentata, dentibus ovatis revolutis glabris. Antheræ exsertæ ecaudatæ. Styli rami compressiusculi, extus minutissime puberuli, cono brevissimo obtuso pubero terminati. Achenia conformia, oblonga, subteretia, multicostata, pappo brevi setuloso coronata; setulis circ. 15 ex costis achenii ortis, simplicibus vel paucis subramosis. — Suffrutex glaber, parum viscidulus, foliosissimus; foliis oppositis summisve alternis, elongato-linearibus, uninerviis, integerrimis; capitulis fastigiato-corymbosis; floribus luteis.

V. MEXICANA. — Between Pelayo and Cadena, in the State of Chihuahua, *Dr. Wislizenus;* May. Valley east of Parras, *Dr. Gregg;* April. — This is said to form a low shrub of two to three or five feet in height. The leaves are two or three inches long, and one or two lines wide, rather thick. The heads are numerous in rather dense terminal corymbs, a quarter of an inch long; the short peduncles with subulate bracts which pass into the scales of the involucre. These are rather rigid and appressed, yellowish, with slightly scarious margins. The paleæ are similar, but narrower and longer, equalling the flowers, minutely glandular. Corolla with the tube glandular, otherwise glabrous. Anthers linear, yellow. Achenia black, much shorter than the

428. A. CANADENSIS, *Michx.; Torr. & Gray, Fl. l. c.* Rocks, two miles east of the Mora River; Aug. (510): also between Bent's Fort and Santa Fé; Oct.

†429. A. FILIFOLIA, *Torr. in Ann. Lyc. N. Y. 2. p.* 211; *Torr. & Gray, Fl. l. c.* Between Rock and Rabbit's Ear Creeks; Aug. — This is a characteristic plant of the plains, from the south bank of the Arkansas, *Dr. Wislizenus*, to Santa Fé. Dr. Wislizenus also gathered it at Valverde, north of the Jornado del Muerto.

†430. A. DISCOLOR, *Dougl.?* (The heads unexpanded.) Santa Fé.

†431. A. LUDOVICIANA, *Nutt.; Torr. & Gray, Fl. 2. p.* 420. Valley of Santa Fé Creek; July (513): Poñi Creek; Aug. (514): also near Council Grove; Sept. (515).

†432. A. VULGARIS, *Linn.?* Santa Fé Creek: an incomplete specimen. (518.)

†433. A. FRIGIDA, *Willd.* Prairies, &c., Poñi Creek and Rock Creek, New Mexico; Aug. to Oct. (512.)

434. GNAPHALIUM SPRENGELII, *Hook. & Arn. Bot. Beech. p.* 150; *Torr. & Gray, Fl. 2. p.* 427. Low places in mountain woodlands, between Santa Fé and Vegas; Aug. — Dr. Wislizenus collected the same species at Chavez, New Mexico, north of the Jornado.*

435. ANTENNARIA DIOICA, *Gærtn.* Hills at the foot of the higher mountains above Santa Fé, chiefly on the northern declivities; June. The masculine plant (521 and 523), and the fertile (521) with the leaves either green above or tomentose; also (524) a form of the fertile plant with rose-colored involucres. — In Geyer's Oregon collection, no. 542 is a remarkable new Antennaria, which, probably from external resemblance only, Sir Wm. Hooker has referred to the Chilian Gnaphalium alienum, *Hook. & Arn. in Jour. Bot. 3. p.* 329. That plant is described as a true Gnaphalium, with about six hermaphrodite flowers in the centre. My specimen from Geyer is a staminate plant, with the pappus manifestly clavate.†

corolla, about 15-ribbed, some of the ribs stronger, thus appearing angular. Pappus as long as the breadth of the achenium.

* Gnaphalium ramosissimum, *Nutt.! in Jour. Acad. Philad.* (*n. ser.*) 1. *p.* 173, is the same (except that the involucre is not tinged with rose-color) as G. Sprengelii, β. erubescens, *Nutt. in Trans. Amer. Phil. Soc.* (*n. ser.*) 7. *p.* 403, which in the *Flora of North America* was doubtfully appended to G. Californicum; but it is probably a distinct species.

† ANTENNARIA GEYERI: argenteo-lanata, spithamæa; caulibus floridis e basi suffrutescente plurimis subsimplicibus ad apicem usque foliosis oligocephalis; foliis spathulato-linearibus densissime lanosis; involucris (pl. sterilis) cylindraceis lanatissimis, squamis oblongo-linearibus apice obtusiusculo scarioso tantum nudatis stramineis, intimis roseo tinctis; pappi setis barbellato-denticulatis superne sensim longeque clavellatis. — Gnaphalium alienum, *Hook.! Lond. Jour. Bot.* 6. *p.* 251, non *Hook. & Arn.* — "Arid, sandy woods near

†436. Erechtites hieracifolia, *Raf.* East of Council Grove; Sept. (481.)

437. Senecio exaltatus, *Nutt. in Trans. Amer. Phil. Soc.* (*n. ser.*) 7. *p.* 410. Var. minor (1–2-pedalis), foliis radicalibus fere ovatis vel obovatis. Valley of Santa Fé Creek, at the foot of mountains, ten miles above Santa Fé; April to June. — This is the same as my specimen of no. 297 of Geyer's Oregon collection, referred to S. exaltatus by Hooker, with the remark that the species varies greatly. It probably includes S. cordatus, *Nutt.* The name is not appropriate for these smaller forms; but some of them are tall and stout.

†438. S. aureus, *Linn.* Santa Fé Creek; June. A small state; the rounded radical leaves deeply crenate-toothed.

439. S. aureus, γ. borealis, *Torr. & Gray, Fl. 2. p.* 442. Santa Fé Creek, at the foot of hills; May, June.

†440. S. filifolius, β. Fremontii, *Torr. & Gray, Fl. 2. p.* 244. Pawnee Fork, and 27 miles south of Bent's Fort; Sept. — Except in the shorter lobes of the leaves, especially the terminal one, this species differs but slightly from the next.

441. S. longilobus, *Benth.! Pl. Hartw. no.* 127: — a form with canescent leaves, some of them often undivided. Hills and sides of mountains around Santa Fé. (470.) Also gathered in New Mexico by Dr. Wislizenus, Col. Emory, and Lieut. Abert.

442. S. longilobus, *Benth. Pl. Hartw. l. c.:* a glabrate form. Along the valley of Santa Fé Creek. (†472, 473.)

443. S. eremophilus, *Richards. Appx. Frankl. Journ. ed. 2. p.* 31; *Hook. Fl. Bor.-Am.* 1. *p.* 334. Santa Fé Creek-bottom; June and Oct. Also met with by Fremont, in his second expedition.

444. S. Fendleri (sp. nov.): perennis, floccoso-incanus, demum subglabratus; caule folioso erecto pedali corymbosi-ramoso; foliis oblongis omnibus pinnatifidis supra glabratis inferioribus in petiolum nudum attenuatis summis sessilibus haud amplexicaulibus, segmentis 11–21 confertis oblongis obtusissimis plerisque inciso-dentatis seu 2–4-lobatis; corymbis compositis polycephalis; involucro campanulato fere ecalyculato 12-phyllo multifloro; ligulis 7–8 oblongis disco duplo longioribus; acheniis glaberrimis. — Foot of mountains along the Creek, twelve miles above Santa Fé; June, July. (478, †480.) — A well-marked species, related to S. eremophilus. Stem stout. Leaves from 2 to 4 inches long including the petiole, some of the lower often only sinuate-pinnatifid, but commonly all deeply pinnatifid or pinnately parted, the crowded lobes from one fourth to

Tshimakaine, Spokan country," in Northern Oregon, *Geyer.* — The heads with unexpanded flowers (little over two lines in length) are sessile and nearly spicate at the summit of the stems; but the vestiges of the previous year show them to have been corymbose.

half an inch long, early glabrate above; but still floccose or white-woolly underneath. Involucre 3 lines long. Rays 4 or 5 lines long.*

* Senecio Tampicanus, *DC.*, is in Dr. Gregg's collection, from a "low valley of the Rio del Parral near Santa Rosalia." It bears the marks of having been floccose at an early stage. — Nearly allied to this is

Senecio multilobatus (*Torr. & Gray, Fl. ined.*): annuus seu biennis, citissime glaber, pedalis, multicaulis; caulibus simplicibus apice corymbiferis; foliis subcarnosis, primariis spathulatis sæpe indivisis, sequentibus omnibus pinnato-9–21-partitis, inferioribus longe petiolatis, summis sessilibus basi vix aut ne vix auriculatis, segmentis cuneato-oblongis apice inciso-dentatis vel 2–3-lobatis; corymbo denso polycephalo; involucro fere ecalyculato 12–14-phyllo; ligulis 5–6 oblongis; fl. disci 20–30; acheniis strigoso-puberulentis. — Abundant on the Uintah River, in the interior of California, *Fremont* (second expedition). — Var. β. foliis inferioribus magis interrupte pinnatisectis, pinnis majoribus lobatis. Monterey to San Gabriel, *Coulter*. — Heads as large as those of S. aureus.

Another unpublished Californian species, which was gathered by Fremont in his third expedition, is

S. eurycephalus (*Torr. & Gray, Fl. ined.*): perennis? glabratus; caule pedali crasso simplici; foliis sublyrato-pinnatipartitis inferioribus longe petiolatis summis sessilibus; segmentis 7–11 oblongis cuneatisve apice incisis grosse et argute dentatis, infimis parvis, superioribus sensim majoribus confluentibus; capitulis magnis 7–9 in corymbum laxum digestis longe pedunculatis; involucro late campanulato parce calyculato circiter 24-phyllo multifloro; ligulis 10–12 elongatis; acheniis glaberrimis. — California, *Fremont;* also *Hartweg*. — Radical leaves somewhat bipinnatifid, the lowest cauline on petioles of from two to four inches long and exceeding the lyrate lamina, the upper lobes all confluent; the succeeding cauline leaves less lyrate, and with more numerous segments, which are about half an inch long, cut into coarse and pointed teeth. Involucre half an inch in diameter. Rays over half an inch long. Pappus very copious.

At Llanos, Dr. Wislizenus gathered a perfectly glabrate form of S. Hartwegi, *Benth.* The achenia are entirely glabrous, and the stem herbaceous.

On account of its *opposite leaves*, its involucre of only four or five broad scales, and the scanty pappus, the following plant of Dr. Gregg's collection appears to constitute a distinct genus, viz.: —

HAPLOËSTHES, *Nov. Gen.*

Capitulum globosum, multiflorum, heterogamum; fl. radii 4–5 ligulatis, fœmineis; disci tubulosis hermaphroditis. Involucrum uniseriale, e squamis 5 late ovalibus plurinerviis constans, ecalyculatum. Receptaculum convexum nudum. Ligulæ late ovales. Corollæ fl. disci 5-dentatæ, sub 10-nerviæ, nervis accessoriis ad medium loborum directis. Antheræ, styli, et achenia (immatura) omnino Senecionis. Pappus uniserialis, e setis capillaribus tenuissimis vix 20, corolla disci paulo brevioribus. — Herba glaberrima, ramosa, gracilis; foliis oppositis filiformibus integerrimis; capitulis parvulis laxe corymbosis; floribus flavis.

H. Greggii. — Valley near Cieñega Grande, Coahuila, *Dr. Gregg;* May. — Plant 2 feet high, erect, with a terete stem and branches, leafy. Root unknown. Leaves all opposite, one or two inches long. Corymb naked. Peduncles slender. Involucre herbaceous, slightly yellowish, two or three lines in diameter. Rays broadly oval, scarcely two lines long, 7-nerved. The accessory or median nerves of the disk-corolla are as strong as the others, but are nearly wanting in one or two of the lobes. Immature achenia terete, glabrous. Pappus of 15 or 20 minutely scabrous capillary bristles.

†445. TETRADYMIA INERMIS, *Nutt.; Torr. & Gray, Fl. 2. p.* 447. Sunny side of a hill near Santa Fé; July. A shrub three feet high; only a single shrub was met with. — T. canescens, *DC.*, to which the above species too nearly approaches, is also shrubby, as is shown by specimens sent by Mr. Spalding from Kooskooskee River.

446. CIRSIUM CANESCENS, *Nutt. in Trans. Amer. Phil. Soc.* (*n. ser.*) 7. *p.* 420? Foot of mountains around Santa Fé, on the sunny side; May, June. (485.) — The specimens are fully two feet high, clothed with floccose white wool, with the leaves decurrent into rather prolonged but narrow and very spiny wings. Heads smaller than in C. undulatum; the flowers apparently ochroleucous.

†447. C. OCHROCENTRUM (sp. nov.): caule foliosissimo erecto foliisque subtus lanugine densa incanis; foliis pinnatifidis sessilibus summis subdecurrentibus supra arenosis, lobis brevibus sæpe bifidis (radicalibus pinnatisectis, pinnis elongato-lanceolatis acuminatis inciso-pinnatifidis) spinis flavicantibus horridis, capitulis subsolitariis ad apicem ramorum foliosorum sessilibus; involucri globosi squamis glabris in spinam validam flavidam abrupte desinentibus. — Mountain-sides, around Santa Fé; July. (486.) — The radical leaves are described from specimens of what I take to be the same species, although there are no flowering stems, gathered by Dr. Gregg in the valley of Saltillo, in March. That plant is said to attain three feet in height. Fendler's specimen is only a foot high, with the cauline leaves from 4 to 6 inches long, white, and very spiny; the longer spines and still stouter ones which tip the scales of the involucre half an inch in length and yellowish (whence the specific name). Heads rather small, less than an inch in diameter. Corolla apparently pale-purple.*

* The following is from Coulter's Californian collection: —

CIRSIUM COULTERI (*Harv. & Gray, in Pl. Coult. ined.*): arachnoideo-tomentosum; caule ramoso; foliis caulinis oblongo-lanceolatis subamplexicaulibus undulatis sinuatis spinescentibus supra laxe arachnoideis; capitulis maximis ebracteatis solitariis; squamis involucri arachnoideo-lanosissimi laxe imbricatis rectis demum patentibus omnibus e basi brevi lanceolata vel oblonga in appendicem acicularem prælongam apice cuspidatam sensim attenuatis. — California, *Coulter*. — Mature heads nearly two inches in diameter. Scales of the involucre all similar, but the inner successively longer; the slender and spine-like filiform appendages thrice the length of the dilated portion; the innermost as long as the (purple?) flowers; the outermost much shorter and at length reflexed. Filaments hairy.

The *Compositæ-Labiatifloræ* gathered by Gregg and Wislizenus in Northern Mexico are: —

LERIA NUTANS, *DC., prodr.* 7. *p.* 42. Bishop's Hill, Monterey, *Dr. Gregg*. Also found in western Texas by Lindheimer and Wright.

TRIXIS CORYMBOSA, *Don?* Near Ojito, *Dr. Gregg*.

PEREZIA RUNCINATA, *Lagasca, Mss. ex Don*. Clarionea (Palesia) runcinata, *Don in Linn. Trans.* 16. *p.* 207; *DC. Prodr.* 7. *p.* 62. Bishop's Hill, Monterey (also coll. by *Dr. Edwards*); and at Cerralbo, *Dr.*

443. C. ALTISSIMUM, *Spreng.; Torr. & Gray, l. c.* High banks on the Arkansas; Sept. (1884.)

Gregg. (Mr. Wright informs me that it abounds on the Rio Grande, Texas, and that he also met with it at Austin.) Flowers purple. Scape often bearing two or three heads. — Hitherto known only in the collection of Sesse and Moçino (*in herb. Lamb.*), from which it was described by Don, who cites the manuscript name of "Perezia runcinata," given to him by Lagasca. This name I restore, first, because the plant appears, judging from the figure in Delessert's *Icones Selectæ*, to be a strict congener of Perezia Gayana, *DC.*, and wants the spinulose-toothed exterior involucral leaves of Clarionea as characterized by De Candolle; and second, because the former name, being the earlier published, has been restored and the Candollian genera, apparently with good reason, united by Endlicher. — The following plants, with undivided leaves and purple flowers, and which have the copious bristles of the pappus by no means in a single series nor penicillate at the apex, as is said of Acourtia, I incline to refer to the same genus. But the genera of this tribe are still very far from being satisfactorily settled.

P. NANA (sp. nov.): caulibus e caudice lanato vix pollicaribus foliosis capitulo (pollicari) circa 20-floro haud longioribus; foliis cuneato-rotundatis sessilibus glabris minutim glanduloso-scabris reticulatis grosse et argutissime spinuloso-dentatis; involucri campanulati squamis 3–4-seriatim imbricatis integris subciliatis calloso-mucronatis, exterioribus ovatis, intimis oblongo-lanceolatis superne purpurascentibus; receptaculo tuberculati-alveolato, alveolis parce hirsuto-fimbrilliferis; ovariis glanduloso-puberis; pappo albo copiosissimo, setis pluriserialibus. — High and dry valley near Chihuahua, *Dr. Gregg;* April. — Leaves and heads each about an inch in length, very large for the size of the plant; but the specimens perhaps are stunted. Lips of the purple corolla nearly equal in length. Manifestly a congener of the succeeding.

P. WISLIZENI (sp. nov.): glaberrima; caule fere bipedali erecto simplici apice nudiusculo monocephalo; foliis indivisis glaucescentibus obovatis vel obovati-oblongis semiamplexicaulibus pulcherrime reticulatis marginibus crebre calloso-denticulatis, summis ad bracteas spathulatas reductis; involucro plusquam 50-floro hemisphærico atro-purpurascente glabro, squamis coriaceis 3–4-seriatim imbricatis subsquarrosis mucronulatis, exterioribus ovato-rotundis, intimis oblongis acuminatis; receptaculo subalveolato glabro; acheniis oblongo-linearibus glabris; pappo 2-seriali sordido. — Llanos, in the Sierra Madre west of Chihuahua, *Dr. Wislizenus;* Oct. — This striking plant is, I doubt not, a close congener of Clarionea carthamoides, *DC.*, judging from the figure given by Delessert, although the involucral scales are entirely destitute of teeth or cilia. The arid leaves are very beautifully reticulated, obtuse, their edges beset with minute salient teeth. The radical leaves are unknown: the larger cauline are four inches long and two or more in width, the narrowed base auriculate-clasping: the uppermost are much smaller, oblong, and half-clasping by a broader base. Head an inch in length and diameter. "Flowers red," deep purple in the dried specimens. Unripe achenia 4 lines long. Pappus half an inch in length, rather shorter than the corolla.

P.? PLATYPHYLLA (sp. nov.): lævigata; caule 2-pedali superne corymboso; foliis coriaceis (infimis ignotis) amplis rotundati-obovatis sinu acuto amplexicaulibus pulcherrime reticulatis crebre arguteque spinuloso-dentatis, ramealibus subhastatis parce dentatis; capitulis corymbosis subfasciculatis; involucri 12-flori turbinati squamis pauciusculis subtriseriatis ciliolatis purpurascentibus vix acutis, extimis ovato-lanceolatis, intimis lanceolatis; receptaculo nudo; acheniis glanduloso-puberulis; pappo albo 2–3-seriali. — Cosiquiriachi, in the Sierra Madre, west of Chihuahua, *Dr. Wislizenus;* Sept. — Stem rigid. Cauline leaves three inches long and almost as wide, strongly clasping by a short and narrowed deeply auriculate base, sharply serrate all

449. STEPHANOMERIA RUNCINATA, *Nutt.; Torr. & Gray, Fl. 2. p.* 472. (Jamesia pauciflora, *Nees in Neuwied. Trav.*) Foot of dry hills, Santa Fé; June, July.*

round with triangular rigid teeth; the rameal leaves much smaller and oblong. Heads numerous in a broad corymb, half an inch long. Corolla, &c., as in the foregoing. Bristles of the pappus copious, rigid, equally serrulate from the base to the apex, not at all penicillate. — This plant is doubtless an Acourtia of De Candolle, who, although he adopts the character "setis apice penicillatis" of Don, yet represents nothing of the kind in the figure of A. hebeclada in Delessert's *Icones*. The copious pappus of this plant also differs from his generic character in that the bristles certainly occupy more than one series. If, therefore, the characters of the pappus of Acourtia are rightly laid down, this plant does not belong to that genus. If not, there remains apparently no valid distinction between it and Perezia.

* Stephanomeria elata, *Nutt. in Jour. Acad. Philad.* (*n. ser.*) 1. *p.* 173, from the character is evidently the same as the earlier published S. virgata, *Benth. Bot. Voy. Sulph. p.* 32. It also occurs in the Californian collections of Coulter, Fremont, and of the Exploring Expedition.

The Oregon collection made by the Rev. Mr. Spalding contains specimens of two very interesting Cichoraceæ, which may be mentioned here, viz. an undescribed Calais, but which I suspect is the Hymenonema? glaucum of Hooker, and a new congener of Scorzonella (Ptilophora, *Torr. & Gray, ined.*) nutans, *Geyer, in Hook. Lond. Jour. Bot.* 6. *p.* 253.

CALAIS MACROCHÆTA (sp. nov.): subscaposa, glabrata; foliis linearibus acuminatis integerrimis vel sæpius remote pinnatilobatis subglaucis, junioribus villo molli caduco pubescentibus; scapo apice furfuraceo; involucri squamis extimis tertia parte brevioribus; acheniis lævibus apice rostrato-attenuatis; pappi paleis oblongis apice bifidis arista ex sinu exserentibus triplo brevioribus. (Hymenonema? glaucum, *Hook. Fl. Bor.-Am.* 1. *p.* 300? & Scorzonella glauca, *Nutt.?*) — Clearwater, on the Kooskooskee, Oregon, *Mr. Spalding.* — Root annual. The smaller specimens, with scapes 6 or 10 inches high, exhibit entire leaves, much like those of C. linearifolia. The larger, with scapes or peduncles 18 or 20 inches high, have broader and flat leaves, which mostly bear three or four short lobes or salient teeth on each side. The foliage is scarcely glaucous. The involucral scales are broadly lanceolate. The paleæ of the pappus are only five, just as in Calais, except that they are shorter and the naked awn is longer. These points being more or less at variance with the little that is known of Hooker's Hymenonema? glaucum, I do not venture to employ that specific name, nor to append it as a synonyme except with much doubt. — The shorter but long-awned paleæ of the pappus in this species, along with the lanceolate involucral scales of Scorzonella § Ptilophora might naturally suggest the propriety of uniting all these plants with Calais. This genus, however, consists of annual plants, with the conspicuous paleæ of the pappus only five in number and convolute around the base of the corolla, and the elongated achenium has a tapering or beaked summit. Scorzonella consists of tuberous-rooted perennials, with the barely oblong achenia not at all narrowed above, and with a pappus of *ten* paleæ which are so short as to appear merely like an abruptly dilated base to the long capillary awns. These are minutely denticulate: while in the section Ptilophora (which, now confirmed by a second species, may be raised to the rank of a genus, still more nearly allied to Scorzonera) the awns are plumose and from 14 to 22 in number.

PTILOPHORA, *Nov. Gen.*

Involucrum 20–40-florum, duplex; exterius brevius laxe calyculiforme, squamis ovato-subulatis; interius uniseriale, squamis lanceolatis sensim acuminatis. Receptaculum nudum, planum, subalveolatum. Ligulæ

†450. HIERACIUM LONGIPILUM, *Torr.; Torr. & Gray, Fl. 2. p.* 477. Eighty miles west of Independence, &c. (489, 503.)

†451. NABALUS ASPER, *Torr. & Gray, l. c. p.* 483. High prairies west of Council Grove; Sept. (493.)

452. LYGODESMIA JUNCEA, *Don; Torr. & Gray, l. c. p.* 484. Around Santa Fé; June, July (497): also Poñi Creek (496).—The juice, according to Fendler, is greenish-yellow.

†453. MALACOTHRIX (LEPTOSERIS, *Nutt.*) SONCHOIDES, *Torr. & Gray, Fl. 2. p.* 486. Low, sandy banks of the Rio del Norte; May. (490.) — This is also in Coulter's Californian collection; which likewise contains a remarkable undescribed species, apparently of this genus.* I notice a singular character in M. sonchoides, M. Coulteri, and espe-

exsertæ. Achenia lineari-oblonga, teretia, multicostata, erostria, callo sublaterali. Pappus simplex uniserialis, niveus, e setis 14–22 gracillimis eleganter plumosis basi paleato-dilatatis constans. — Herbæ perennes glabræ; caule e radice fusiformi tuberosa erecto, ramoso; foliis integris vel pinnatilobatis, ramis superne longe nudis pedunculiformibus apice subincrassato monocephalis; capitulis ante anthesin nutantibus; floribus flavis.

1. P. NUTANS: gracillima; foliis angustissime linearibus elongatis e basi subamplexicauli sensim filiformi-attenuatis integerrimis seu pinnatilobatis, lobis filiformi-subulatis; involucro cylindrico 20-floro glabrato, squamis exterioribus subquinque, interioribus 8; acheniis scabridis extimis puberulis; paleis pappi oblongis seta plumosa 5–6-plo brevioribus. — Scorzonella (§ Ptilophora, *Torr. & Gray, Mss.*) nutans, *Geyer, Mss.* (under Crepis), *Hook. in Lond. Jour. Bot. 6. p.* 253. — "Dry, sunny, loamy declivities of Spokan and Cœur d'Aleine Mountains; June. Root nearly as large as the little finger, succulent and almost transparent, full of a bitterish milky juice, eaten raw by the Indians." *Geyer.* Also collected by the Exploring Expedition between Spokan and Colville. — The involucre when young, like the base of the stem, is slightly and minutely glandular-pulverulent; otherwise glabrous.

2. P. MAJOR (sp. nov.): foliis spathulato-lanceolatis inferne attenuatis vel in petiolum marginatum angustatis integerrimis seu laciniato-dentatis; involucro campanulato glandulosi-puberulo multifloro, squamis exterioribus 8–9, interioribus 10–13 subulato-acuminatis; ovariis glaberrimis; pappi setis ima basi tantum scarioso-dilatatis. — β. LACINIATA: foliis elongato-lanceolatis laciniato-pinnatilobatis, supremis integerrimis lineari-attenuatis; involucro fere glabro. — Clear Water, on the Kooskooskee, Oregon, *Mr. Spalding.* — Stems a foot or more in height, or in the var. β. lower. Leaves half an inch or more in width. Heads three fourths of an inch long, larger than in the foregoing species. Mature achenia unknown; but the fructified ovaries are very short, abrupt at both ends, and perfectly glabrous. The smoother involucre and the more slender foliage of the variety here indicated tend to unite this with P. nutans; but in the extremely short chaffy base of the setæ of the pappus, and in the more numerous involucral scales and flowers, it entirely accords with P. major.

Allied to this genus, but nearer to Oporinia, is no. 1815 of Hartweg's Californian collection, which before this, probably, has been characterized by Mr. Bentham.

* MALACOTHRIX? (MALACOLEPIS) COULTERI, *Harv. & Gray, Pl. Coult. ined.*): glaberrima, glaucescens; caule superne ramoso; foliis lanceolatis oblongisve inferne dentatis seu pinnatifidis basi auriculata amplexicaulibus, ramealibus cordato-amplexicaulibus acuminatis fere integerrimis; capitulis (magnis) subcorymbosis breviter pedunculatis; squamis involucri subglobosi multiflori pluriseriatim imbricatis omnino nisi costa

cially in M. Californica, namely, that two (opposite) bristles of the pappus are naked instead of barbellate, and rather stronger and less deciduous than the others.

454. CREPIS AMBIGUA (sp. nov. non *Balb.*): caule scapiformi e radice perenni simplici basi folioso apice racemoso-5–8-cephalis foliisque obovati-oblongis integerrimis setis patentibus sparsis hispidis cæterum glaberrimis; capitulis majusculis longiuscule pedunculatis circa 30-floris; involucro cylindrico hirto, squamis linearibus, extimis duplo brevioribus appressis; ligulis (flavis?) genitalia haud superantibus; acheniis fusiformibus superne sensim angustatis multicostatis glaberrimis pappum albidum longitudine æquantibus. — Level, grassy places along Santa Fé Creek; June to Aug. — A foot high, from a thick perennial root, which yields a white juice; the purplish stem leafy only near the base, above nearly smooth and bearing one or two linear bracts. Leaves 2 or 3 inches long, sessile; the radical with a tapering base, hispid with slender bristles above, purplish underneath, resembling those of Hieracium Gronovii, β. subnudum. Heads two thirds of an inch in length. Ligules very short, little longer than the pappus, usually shorter than the styles. Mature achenia blackish, a third of an inch long, attenuated upwards, but not truly rostrate. Pappus copious, dull white, of bristles nearly as stiff as those of Hieracium, but occupying much more than one series; — on which account I refer the plant to Crepis (although the pappus is not bright white) rather than to Hieracium.

455. MACRORHYNCHUS PURPUREUS (sp. nov.): perennis; foliis e caudice crasso rosulatis linearibus integerrimis vel plerisque pinnati-3–7-lobatis acutis crassiusculis subglaucis glaberrimis; scapo aphyllo (6–8-pollicari) juniore floccoso-pubescente sub capitulo lanoso; involucri glabrati squamis 3-seriatis appressis purpureo pictis obtusiusculis, intimis linearibus extimas oblongas duplo superantibus; floribus (in sicc.) purpureis breviter ligulatis; acheniis lineari-fusiformibus æqualiter 10-costatis glaberrimis in rostrum scabridum iisdem pappoque paulo brevius attenuatis. — Grassy places, bottom of Santa Fé Creek; July. — Plant with the thick caudex and the aspect of a Troximon; but most of the densely clustered leaves (two or three inches long) bear a few short linear lobes about the middle. Scapes at length glabrous. Heads cylindraceous, two thirds of an inch long; the scales of the involucre mottled or spotted, or the broader exterior ones entirely painted, except the margins, with deep purple. Flowers purple; the ligule

viridi scariosis late ovalibus obtusissimis, intimis lanceolatis acutis. — California, *Coulter*. — A foot high, stout; the root unknown. Leaves 2 inches long. Heads 10 lines in diameter. Flowers, ovaries, and pappus as in Malacothrix; but the scarious involucre is very remarkable. The fruit is unknown.

Remarkably large specimens of Malacothrix Californica, with coarser foliage, and the head, including the expanded rays, two inches in diameter, were collected by Dr. Gambell at Pueblo de los Angelos and distributed under the name of "Macrorhynchus laciniatus."

short. Achenia slender, half an inch long including the beak. Pappus one third of an inch long, of minutely scabrous and, for this genus, rather rigid bristles, but finer than in Troximon roseum, *Nutt.* — From its resemblance to the present species and the short beak of its half-formed fruit, I suspect that T. roseum also is a Macrorhynchus; but its pappus is absolutely as well as relatively longer (half an inch in length) than in this plant, its involucral scales all more prolonged and acute, its ligules smaller, &c.*

456. Taraxacum palustre, *DC.*, var. latifolium: foliis spathulato-oblongis obtusissimis. (T. montanum, *Nutt.! in Trans. Amer. Phil. Soc. (n. ser.)* 7. *p.* 430, non *DC.*) Banks of Santa Fé Creek; May. (†495, 500, 501.) — The leaves in a specimen from Nuttall are half an inch, in Fendler's fully an inch, in width, sinuate-toothed; those towards the base often narrower and sharper, and runcinate-reflexed.†

†457. Lactuca elongata, γ. sanguinea, *Torr. & Gray, Fl.* 2. *p.* 496. East of Mora River; August. (491.)

458. L. graminifolia, *Michx.*, approaching L. elongata by the runcinate-pinnatifid radical leaves. — Santa Fé Creek in the mountains; July. (504, †505.)

459. Mulgedium pulchellum, *Nutt.* Loose, gravelly soil, Santa Fé Creek; July. (506.) Also Rock Creek, &c. (492.)

†460. M. Floridanum, *DC.; Torr. & Gray, Fl.* 2. *p.* 498. Council Grove. (494.)

461. Sonchus oleraceus, *Linn.* Fields around Santa Fé; July. (507, †508.)

†462. S. asper, *Vill.; Torr. & Gray, l. c. p.* 501. Waste places, Santa Fé. (502.)

* Specimens of Troximon glaucum, β. dasycephalum, *Torr. & Gray*, in Geyer's Oregon collection (no. 666) and in that of Mr. Spalding, with the heads sometimes an inch and a half in diameter, and the leaves lanceolate or oval-lanceolate, often coarsely toothed, and an inch and a quarter wide, evidently constitute the T. taraxicifolium, *Nutt.*, from the same region.

† At Saltillo, Dr. Gregg collected a Dandelion, which is doubtless Taraxacum Mexicanum, *DC.*, with the young leaves somewhat hairy, and the neck and whole scape at first very woolly, but becoming naked with age. The achenia are nearly smooth towards the base.

*** For Hymenatherum gnaphalodes, p. 90 (note), I desire, by a slight change, to substitute the name Hymenatherum Gnaphalopsis, and to cite as a synonyme the Gnaphalopsis micropoides, *DC. Prodr.* 7. *p.* 248 (inter Compos. incertæ sedis). De Candolle founded this genus upon a plant gathered at Monterey, New Leon, in the month of January, by Berlandier. Although he describes his plant as dicœcious? with an involucre of exterior subfoliaceous scales and an inner series of distinct, glabrous scales, observed no ligules, describes the pappus as consisting of only five paleæ, and makes no mention of globular pellucid glands under the wool of the leaves, &c., yet I am confident of its identity with Dr. Gregg's plant (which really accords in none of these respects) from the same habitat, and gathered at the same season of the year. The specimen examined probably was very imperfect, and with the ray-corollas fallen or abortive. Much finer specimens of our plant (from Gregg's collection) have just reached me, with the stems branching after the manner of Micropus, and four inches in length; and a reëxamination confirms all the characters previously assigned.

RUDBECKIA? PORTERI, p. 83 (note), has been found anew by H. W. Ravenel, Esq., during the past summer, in the mountains of Georgia. A capitulum, just received in a letter from my friend Mr. Curtis, exhibits the fructiferous disk considerably prolonged, and the ripe achenia short and thick, obscurely quadrangular.

The subjoined is a Cruciferous plant which was not received in time to be noticed in the proper place : —

SYNTHLIPSIS, *Nov. Gen.* Crucif.-Thlaspid.

Calyx basi subæqualis, sepalis linearibus laxis. Petala obovata, ungue lato. Discus hypogynus inter petala et stamina annularis, contorto-undulatus. Filamenta edentula, filiformia. Ovarium oblongum, multiovulatum, stylo gracili brevius : stigma depresso-capitatum. Silicula septo contrarie compressa, oblongo-elliptica, emarginata (vel immatura leviter obcordata) ; valvis navicularibus acutissime carinatis, apteris, apice tantum marginato-subproductis ; septo lato-lineari uninervi. Semina in quovis loculo 8 – 10, biserialia, e funiculo libero pendula, orbiculata, compressa, immarginata. Cotyledones planæ, septo contrariæ, radiculæ adscendenti carinam valvarum spectanti accumbentes. — Herba ramosa diffusa, pube stellata canescens ; foliis sinuato-pinnatifidis ; racemis laxis ; floribus ut videtur roseis ; pedicellis fructiferis patulis vel recurvis.

S. GREGGII. — Valley near Saltillo, Coahuila, January 4, 1847, *Dr. Gregg.* — Root and radical leaves not seen. Stem apparently low, diffusely branching, rigid ; the branches, like the whole plant, whitened with a close and fine stellate pubescence, leafy. Leaves oblong, coarsely sinuate-toothed or pinnatifid ; the lower narrowed into a petiole ; the others almost sessile. Petals 3 lines long, evidently tinged with purple or rose-color. Pods 4 or 5 lines long, and 2 lines or a little more in width, canescent, about the length of the pedicel, flattened contrary to the narrow septum, pretty strongly emarginate at the apex, tipped by the slender style ; the compressed-navicular one-nerved valves sharply carinate, but the keel scarcely if at all margined, except at the apex, where it is manifestly produced. — The specimen upon which this evidently new genus is founded occurs in a collection by Dr. Gregg, long since forwarded to me by Dr. Short, but which has only now come to hand. Although the genus must be referred to the Thlaspideæ, its nearest affinity is with Vesicaria through the Mexican V. argentea, *Schauer* (which I have in fruit from Coulter's Mexican collection, no. 691), in which the silicle is evidently somewhat compressed contrary to the elliptical septum, but the cotyledons are still parallel with it; and with Physaria (vide *Gray, Gen. Ill.* 1. *p.* 162) through P. Geyeri (Vesicaria Geyeri, *Hook.*), in which, moreover, the seed hangs with the cotyledons contrary to the septum, as in the present genus. It is also allied to the Californian Lyrocarpa, *Hook. & Harv.* In aspect it bears considerable resemblance to the Dithræa Wislizeni of Engelmann ; — a flowering specimen of which, gathered by Mr. Gordon, near the sources of the Canadian, exhibits a pair of ovules in each cell. The name, *σύνθλιψις, compression*, alludes to the character of the pod which distinguishes the genus from Vesicaria and Physaria.

Dr. Gregg's collection also contains specimens, gathered "west of Parras," of a canescent plant with much the habit of Synthlipsis Greggii, but with linear-oblong pods (siliques rather than silicles), a cordate-capitate stigma, &c. : but the immature seeds seem as if the cotyledons would be incumbent. Better materials are requisite for its proper determination. = Greggia Camporum Gray & Fl. Ms.

*** Page 63, line 19, for no. "348" read 342.

(To be continued.)

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